Social, Governance, and Economic Impact Assessment of Information and Communication Technology Interventions in Rural India

by

Rajendra Kumar

B.Tech. Civil Engineering
Indian Institute of Technology, Kanpur, 1988

M.Tech. Management and Systems
Indian Institute of Technology, Delhi, 1992

SUBMITTED TO THE DEPARTMENT OF URBAN STUDIES AND PLANNING IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER IN CITY PLANNING
AT THE
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

JUNE 2004

Signature of Author: _____
Department of Urban Studies and Planning
May 12, 2004

Certified by: _____
Alice H Amsden
Professor of Urban Studies and Planning
Thesis Supervisor

Accepted by: _____
Dennis Frenchman
Professor of Urban Studies and Planning
Chair, Master in City Planning Committee

Social, Governance, and Economic Impact Assessment of Information and Communication Technology Interventions in Rural India

by

Rajendra Kumar

Submitted to the Department of Urban Studies and Planning on May 12, 2004 in Partial Fulfillment of the Requirements for the Degree of Master in City Planning

ABSTRACT

Among the many initiatives in using information and communication technologies (ICTs) for development, telecenters or kiosks occupy a prominent place. These centers provide public access to these technologies and related services through computers and internet. The last decade has seen many such initiatives being launched to bring the benefits of ICTs to the rural population in many countries. As most of these initiatives are relatively recent, there have been few evaluations of their social and economic impacts in their communities. There is also lack of a good understanding about a sound conceptual and theoretical framework for planning and design of such centers.

This study seeks to fill a portion of this information gap by focusing on assessing the social, governance, and economic impacts of one such relatively large project in rural India and examining its implications and sustainability within the framework of the theory of diffusion of innovations. The project under study is the widely acclaimed Sustainable Access in Rural India (SARI) project, which has established computer and internet kiosks in over 40 rural communities in Tamil Nadu state in India. The kiosks provide basic computer education, e-mail, web browsing, e-government, health, agricultural and veterinary services.

There are four major findings that emerge from this study. First, though the kiosks have succeeded in establishing a visible presence in their communities, their overall reach is still limited. Their users are mostly school and college students, male, and come from a higher socioeconomic status when compared to that of their communities. In this sense, the kiosks may be leading to further exacerbation of the existing socioeconomic inequities within their communities.

Second, the kiosks have produced significant governance impacts through increased demand for, and improved delivery of, two e-government services: applications for birth certificates and old age pensions. This seems attributable to the relative advantage of using the kiosk for these services in terms of savings in costs, time, and effort when compared to those in the traditional modes of availing the same services.

Third, the kiosks have also produced significant economic impacts through lowering the cost of some services, and creation of new economic and employment opportunities. The services whose costs have been brought down include basic computer education, communication (through email and voice chat), and e-government services. New economic and employment opportunities have been generated by providing computer education to the local youth, and enabling access to online information about jobs.

Fourth, the study points out the relevance of the socio-cultural relationships among various castes in the diffusion of kiosks. It points out the importance of location of the kiosks, affordability of the services, relevant and localized content, and adoption and use by local champions within the communities to ensure and sustain their wide diffusion. It also analyzes the potential of providing new services which could be crucial in the financial sustainability of the kiosks. Importance of developing and maintaining new institutional partnerships is also emphasized to ensure relative advantage in the delivery of services. It specifically analyzes this aspect with reference to the recent deterioration in the e-government services.

The study concludes with making recommendations aimed at facilitating wider diffusion of the kiosks, especially among the socially and economically most backward communities (Dalits), and ensuring their sustainability. At the kiosk level, the operators need to communicate more at interpersonal level among the households to widen the user base, especially among the Dalits. They also need to improve the present service delivery and make them more affordable. At the project level, new institutional partnerships should be developed to provide new services and the existing ones should be strengthened to improve the present services. There is also a need to focus on developing and providing localized and relevant content.

Thesis Supervisor: Alice H. Amsden
Title: Professor, Department of Urban Studies and Planning, Massachusetts Institute of Technology

ACKNOWLEDGEMENTS

I have benefited from the contributions of a large number of people, directly and indirectly, towards this thesis. In particular, I would like to thank:

The kiosk users interviewed for so generously spending their precious time in answering my detailed questions.

Professor Alice H Amsden for her advice, feedback, and encouragement to explore beyond the obvious.

Professor Balakrishnan Rajagopal for his valuable guidance and advice in framing the appropriate research questions, and his thorough feedback on my thesis drafts.

Professor Michael Best of the MIT Media lab for his continuous advice and guidance throughout the field study and later. Without his support, the field study would not have been possible.

Professor Ceasar McDowell for reading my thesis draft and providing valuable comments and suggestions.

Professor Ashok Jhunjhunwala of IIT, Madras for providing me with valuable information about the project.

Vivek Harinarain, Secretary, Information Technology Department, Chennai for providing me with valuable information about government policies towards the project.

Joe Thomas of SARI project, Chennai for his continuous support during the field study, providing valuable data from other surveys, and answering my questions so patiently.

B. Chandramohan, District Collector, Madurai for his strong support throughout the field work. Thanks are also due to the Tahsildar, Melur and other staff of the Taluk office for providing me with information and data on major government services.

P.G. Ponnapa and Elizabeth Alexander of n-Logue Communications, Chennai for providing helpful information about the project.

Prof. R. Jayaraman of Madurai Kamaraj University for his help in providing students from his department for interviewing the kiosk users.

B. Chandramouli, Director of Census Operations, Chennai, for providing me with the village level census data from Census, 2001

H.S. Ganesha of Dhan Foundation for providing valuable information about the Dhan kiosks.

Annapoorani of the SARI project, Madurai, for accompanying me on my field visits, help in conducting interviews, and collecting information about the kiosks.

The kiosk operators for their valuable time in answering my very specific questions about their kiosks.

Field staff from n-Logue Communications at Madurai for their help and support during this project.

Students from the Madurai Kamaraj University who conducted the user interviews and provided me with the data for conducting this research.

Last but not the least, I would like to thank my wife, Sushma, for encouraging me constantly whenever things seemed to go out of hand. My very special thanks are due to my son, Kshitiz, who had to repeatedly sacrifice his right over my time during this entire process. I would always remember his sense of amazement at what I was typing on my computer all the time.

TABLE OF CONTENTS

1. INTRODUCTION

Information and communication technologies (ICTs) have fundamentally changed the way individuals communicate and access information. They have also become tools of governance by providing new ways of reaching the people and delivering services. They have the potential to cause impact on human society on a scale comparable to that of the industrial revolution (Alberts and Papp, 1997), and can deeply impact democratic institutions and democratic governance (King and Kraemer, 2003). In the context of developing countries, ICTs have been acknowledged as major instruments of development in a variety of areas: empowering communities by increasing their access to information and widening the opportunities available to them; e-governance; delivering services such as health; providing education; etc. It has been argued that ICTs can be harnessed to bridge the *digital divide* in access to information and technologies; and also be used for poverty alleviation, policy advocacy, local governance, and educational development (Flor, 2001).

Among the many initiatives in ICTs in developing countries, telecenters occupy a prominent place (Gomez, Hunt, and Lamourex, 1999). These centers provide shared public access to information and communication technologies and services through computers and internet. The last decade has seen many such initiatives being launched in rural areas in many countries with the aim of providing these services to the rural population. As most of these initiatives have only recently been launched, there have been relatively few evaluations of their social and economic impacts in the communities where they are situated. There is also lack of a good understanding about a sound conceptual and theoretical framework for planning and design of telecenters. This study seeks to fill a portion of this information gap by focusing on assessing the social, governance,

and economic impacts of one such relatively large project in rural India and examining its implications and sustainability within the framework of the theory of diffusion of innovations (Rogers, 2003).

1.1 Literature Review on Telecenters or Kiosks

Telecenters or Kiosks[1] have generally been defined as places or centers that provide shared public access to information and communications technologies for meeting the educational, social, personal, economic, and entertainment needs of the community (Fuchs, 1998; Harris, 1999; Gomez *et al*, 1999; Proenza, 2001). Telecenter movement has been driven principally by the proliferation of internet and the World Wide Web starting in the mid nineties (Colle and Yonggong, 2002). Beginning in the early nineties in Northern Europe, today there are tens of thousands of such centers throughout the world (EJISDC, 2001). In the following sections, I briefly present the major debates and issues relating to the role of telecenters in harnessing ICTs for development, especially in poor communities in developing countries.

ICTs and Development: Telecenters as Instruments for Development

ICTs have increasingly been looked upon as major instruments for development. Information and knowledge lie at the heart of economic and social development and ICTs are perceived to be the key to harness these for achieving international development goals (Chataway & Wield, 2000; Mansell & When, 1998; Velden, 2002; World Bank, 1998; UNDP, 2000; UNICT Task Force, 2003). Several major international initiatives such as The Digital Opportunity Task Force (2001), constituted by the G-8; the Digital Opportunity Initiative (2001), an initiative of UNDP and some other organizations; and the Global Development Gateway

1 Use of the word 'telecenter' is more common in the literature. However, the SARI project uses the term 'kiosk', which is similar in concept to a telecenter.

(2001), an initiative of the World Bank, have all acknowledged the great potential of ICTs in bridging the international knowledge and information divide.

Telecenters have gained prominence as the primary instruments for bringing the benefits of ICTs to the poor communities where the technological infrastructure is inadequate and costs of individual access to these technologies are not affordable. They are thought to be capable of addressing a host of issues related to social and economic development or the so called *digital divide* (Roman and Colle, 2001 and 2002 (1)): access to information and technologies; education; rural and agricultural development; health services; e-government; social and cultural integration and preservation; creation of new economic opportunities and e-commerce (EJISDC, 2001). They provide equitable opportunities for access to information by overcoming the barriers of distance and location, and by facilitating access to information and communication, they have the potential to foster social cohesion and interaction (Young *et al*, 2001).

Importance of Relevant Content

Though ICTs have been viewed as instruments for development for a long time now, the focus till about the beginning of this decade was principally on providing the technological infrastructure to help people get connected and not so much on relevant content (Colle and Yonggong, 2002). With increasing experience in their deployment and use around the world for social and economic development, the role of context and appropriate content have now come to be recognized as central issues (Boyle, 2002; Velden, 2002). In the specific context of telecenters, it was only when some evaluation reports started pointing out their non-use by the target users due to lack of relevant content (UNDP, 2001), that the focus shifted to this issue in a major way. A notable initiative in this direction was taken by the World Bank with the launch of the Global Development Gateway towards the end of December 2001. Several other studies have also pointed out the

importance of local and relevant content in spreading the benefits of ICTs widely among the local communities (McLellan, 1998; Roman and Colle, 2002 (2)).

A Theoretical Framework for Telecenters: Diffusion of Innovations

Most of the studies on telecenters till date have focused on the operational and sustainability aspects. Theoretical or conceptual framework for planning and evaluation has largely been missing from the debate (Roman, 2003). Roman (2003) has provided a very cogent theoretical and conceptual framework for telecenters using the theory of diffusion of innovations (Rogers, 1995). He describes three principal attributes of innovations which could be very useful in telecenter research: relative advantage, compatibility, and complexity. He also underscores the importance of socio-structural environment in innovation diffusion and adoption. In one of the early attempts to understand telecenters within the diffusion framework, Johnson (2003) examines how incorporating a gender dimension into telecenter design can enhance their diffusion among women.

Telecenter Evaluation: Performance and Socioeconomic Impact

Though telecenters have been in operation in various parts of the world for over a decade now, evaluations of their functioning have tended to focus more on their operational aspects, such as their technical, financial, and managerial performance and sustainability. Several evaluations and case studies have focused principally on these aspects (Etta and Wamahiu (eds.), 2003; Fuchs (ed.), 1998; Whyte, 2000; Judy et al, 2001; Latchem and Walker (eds.), 2001). Several studies have discussed possible frameworks and approaches to telecenter evaluations (Reilly and Gomez, 2001; Harris, 1999; Whyte, 2000; Gomez *et al*, 1999). There have been relatively few studies focusing on evaluation of social and economic impact of telecenters on the communities they

are situated in. While some studies have looked at the social impact of the community telecenter initiatives largely through anecdotal evidence (Holmes, 2001), others have examined their impact on poverty reduction (Ulrich, 2004; Gerster and Zimmerman, 2003). Some studies have focused mainly on evaluations of ICT initiatives in e-government (I.I.M. Ahmendabad, 2002; Madon and Kiran, 2001; Lobo and Balakrishnan, 2002).

Empirical research till date suggests that telecenters may be leading to exacerbation of the existing socioeconomic inequalities (Blattman *et al,* 2002; Holmes, 2001; Hudson, 2002). The theory of diffusion of innovations also predicts that this is likely to happen, especially in developing countries (Rogers, 1995). This is also in line with the 'knowledge gap' hypothesis (Trichenor et al, 1970). In the specific context of diffusion of internet worldwide, this has been confirmed in the Human Development Report, 2001 (UNDP). These findings have important implications for the design of telecenters. Sufficient research is yet to be done to enable us to adequately understand how they can truly address the issue of narrowing the existing socioeconomic inequities.

Telecenter Sustainability

Sustainability of telecenters has received relatively greater attention from researchers. Several studies have looked at the many aspects of sustainability. Proenza (2001) examines the structural conditions or technical infrastructure, management structure, and policy and regulatory framework for sustainability of telecenters. Financial sustainability, an important aspect of the operation of telecenters if they are to gain widespread acceptability, has been examined in a number of studies. Best and Maclay (2002) identify six critical issues in search of economic sustainability of telecenters: costs, revenues, networks, business models, policy, and capacity. The World Bank (2003) attempts to provide guidelines for government policy to make telecenters commercially viable as

private businesses - though with some development functions. Roman and Colle (2001) provide a list of key themes for examining sustainability: national commitment, role of partnerships, local champions or early adopters, community volunteers, clustering of telecenters, increasing awareness about ICTs, role of research in creating a viable enterprise, a business plan rooted in the culture of the community, focus on information services rather than only on computers and internet, and broad-based community participation. Some authors have emphasized the importance of social impact over mere financial sustainability of the telecenters (Dagron, 2001).

1.2 Relevance and Scope of This Study

As stated before, research on the social and economic impacts of telecenters is still in its infancy and their role in bringing benefits of ICTs to poor communities is only now beginning to be understood. There is also lack of a sound conceptual and theoretical framework for planning of telecenters. This study seeks to fill a portion of this crucial information gap in this area. It examines the social and economic impacts of telecenters in rural communities based on empirical research and attempts to place them within the framework of the theory of diffusion of innovations. It also makes policy recommendations based on the observed and perceived consequences of this innovation, especially with regard to addressing the issues of inequitable access, reach, and use of the kiosks within these communities.

In this study, I specifically focus on the highly acclaimed Sustainable Access in Rural India (SARI) project, which has emerged as a pioneering initiative in providing information and communication services to the rural communities through internet kiosks in Tamil Nadu state in India. Starting in Nov. 2001, the project has established 41 village internet kiosks in the Madurai district as of August 2003.

This study focuses on four major areas: assessing the differential social impact of the kiosks with regard to the socioeconomic status of the kiosk users and that of their respective village communities; assessing their governance impact by analyzing the impact of e-government services on the overall demand for these services; assessing their economic impact through creation of, and access to, new economic opportunities; and examining their financial, operational, and institutional sustainability. I also examine the extent of diffusion of the kiosks within their communities and how the unique socio-cultural context of rural India is likely to affect it in future. Finally, I present the conclusions and recommendations in the light of the findings of the study.

2. THE SARI PROJECT

The SARI project is a collaborative venture of Indian Institute of Technology (I.I.T.), Madras; Massachusetts Institute of Technology (M.I.T.) Media Lab; Berkman Center for Internet and Society, Harvard University Law School; I-Gyan Foundation; and n-Logue Communications Pvt. Ltd. It aims at providing comprehensive information and communications services to the rural communities using computer and internet kiosks in villages.

2.1 The Technology Used

The internet connectivity to the kiosks is provided using the CorDECT Wireless-in-Local Loop (WLL) technology developed at the IIT, Madras. This provides wireless connectivity to subscribers within a radius of 25-30 kilometers of a base station. The connection speed is 35/70 kbps for digital internet and telephone access. The costs of infrastructure installation and operation are lower than those of conventional modem based access using telephone lines (Jhunjhunwala, 2000). Though technically telephone access is possible, the kiosks are not providing it at present (as of August 2003) due to lack of agreement with an external carrier. The internet connectivity is provided by n-Logue Communications Pvt. Ltd., which acts as the local Internet Service Provider (ISP).

2.2 The Project Area

The project is being implemented in Madurai district of Tamil Nadu state in India (Fig. 2.1). Madurai is located in the central part of the state (Fig. 2.2) and the kiosks are located in villages in Melur Taluk of the district (Fig. 2.3). The district

itself is one of the relatively large districts in the state with a population of 2,578,301 (Census, 2001) and a geographical area of 3,741.7 square kilometers. Agriculture is the main occupation of the people here. Though the district is largely rural, Madurai, the district headquarters, is the second largest city in the state with a population of 1,094,776 (Census, 2001). Owing to this large urban center, the proportion of urban population in the district is relatively high at 56% compared to 43.9% for the whole state. Most of the demographic indicators based on the latest Census 2001 data indicate that the district is relatively more developed when compared to the state as a whole. For example, the literacy rate in the district is 78.7%, which is higher than that of state (73.5%). The female literacy rate in the district is 69.9%, which is again higher when compared to that for the state (64.6%). The proportion of the Dalit or the Scheduled Castes and Tribes (SC/ST) population, traditionally the most socially and economically disadvantaged communities in India, is relatively low in the district at 12.8% compared to 20.2% for the state (Census, 1991).

Melur is one of the seven Taluks in the district with a geographical area of 727.2 square kilometers. Compared to the district as a whole, Melur is mainly rural with 83.7% of its 251,919 people living in rural areas (Census, 2001). Melur is the only town in the Taluk with a population of 32,878 (Census, 2001). The Taluk has a relatively high SC/ST population at 16% (Census, 2001), when compared to that for the entire district. The literacy rate in the Taluk is 68.7% (Census, 2001), which is far lower compared to that of the district. This indicates that the Taluk is relatively less developed when compared to the district as a whole.

Fig. 2.1. Location of Tamil Nadu in India
(Source: www.mapsofindia.com)

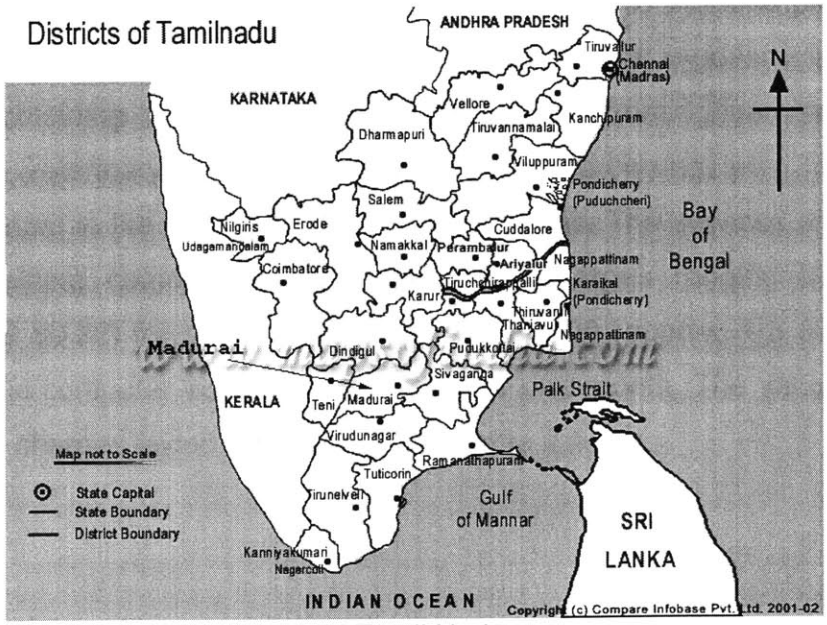

Fig. 2.2: Madurai district in Tamil Nadu
(Source: www.mapsofindia.com)

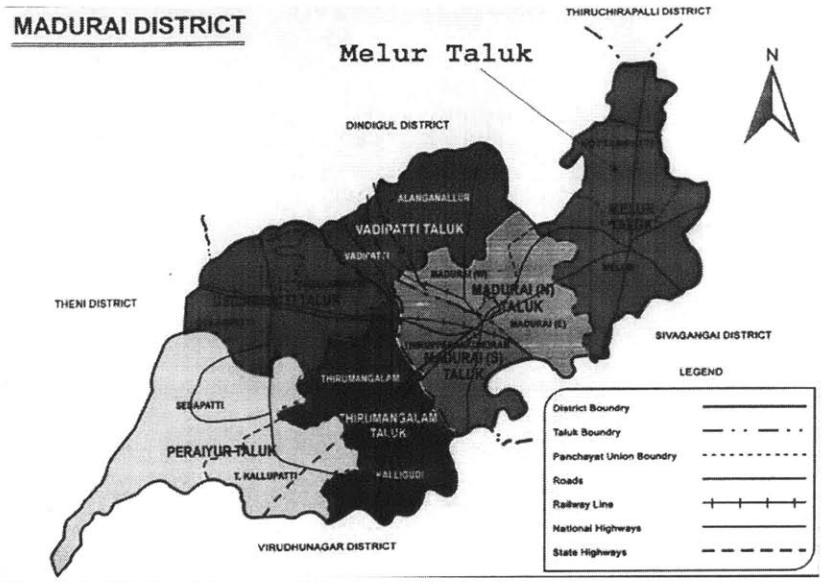

Fig. 2.3: Melur Taluk in Madurai District
(Source: Madurai District Statistical Handbook, 2001-02)

2.3 Kiosk Services

The kiosks provide a host of applications and services to the rural people, which include computer education; email/voice mail/voice chat; e-government services such as obtaining birth and death certificates from government offices; agricultural, veterinary, and health services; web browsing, etc. They provide internet content in the local language in these areas. The services are based on a self-sustaining commercial model with the charges ranging from Rs. 10 (approx. US $0.22) for sending an email to Rs. 100 (approx. US $2.2) for one hour of basic computer education everyday for one month. The various services offered and charges levied are given in the Table 2.1.

Table 2.1: Services Offered and Charges Levied at the SARI Kiosks

Service	Unit of Charge	Rate (Rs.)
Web Browsing	Per Hour 1-15 min. 16-30 min. 31-60 min.	25 10 15 25
E-mail/Voice mail/Photo mail/Video mail	Per email	10
E-Post (Inter Village email Service)*	Per email	5
Online Chat	Internet time per hour	25
Video Conferencing	Internet time per hour	25
E-government Services	Per application	10
Message to a Private Eye Hospital	Per message	10
Agricultural and Veterinary Services	Per message	10
Computer course – Beginner's level	Per month	50/75**
Computer course- Intermediate level	Per month	100
Astrology	One full set of printouts	140
Studio	One set of 5 photos	50

* Currently being offered by the Dhan Kiosks only
** Dhan Kiosks usually charge Rs. 50 while n-Logue kiosks usually charge Rs. 75.
Source: Interviews with kiosk operators by the author
(Note: 1 US $ = Approx. Rs. 47 in Aug. 2003)
Author: Rajendra Kumar

2.4 Partnerships for Delivery of Services

The project has developed partnerships with different agencies - both public and private - to provide various services to the users. These include tie-ups with the state government to provide e-government services, with the Tamil Nadu Agricultural and Veterinary University for providing agricultural and veterinary services, and with a private eye hospital for providing services for eye check-ups. The state government has supported the project from the beginning by offering e-government services through the kiosks for issue of birth and death certificates, and by receiving petitions through email for a number of other services and benefits, such as for issue of community and income certificates, copies of land and cultivation records, complaints regarding civic services, and general petitions about any other issue. The focal point for offering the e-government services has been the Taluk office at Melur, which is the main administrative office responsible for maintaining the birth and death records, land ownership and cultivation

records, and for issue of other types of certificates, such as for community, income, legal heirship, etc.

Fig. 2.4 explains the role of these partnerships in the delivery of services.

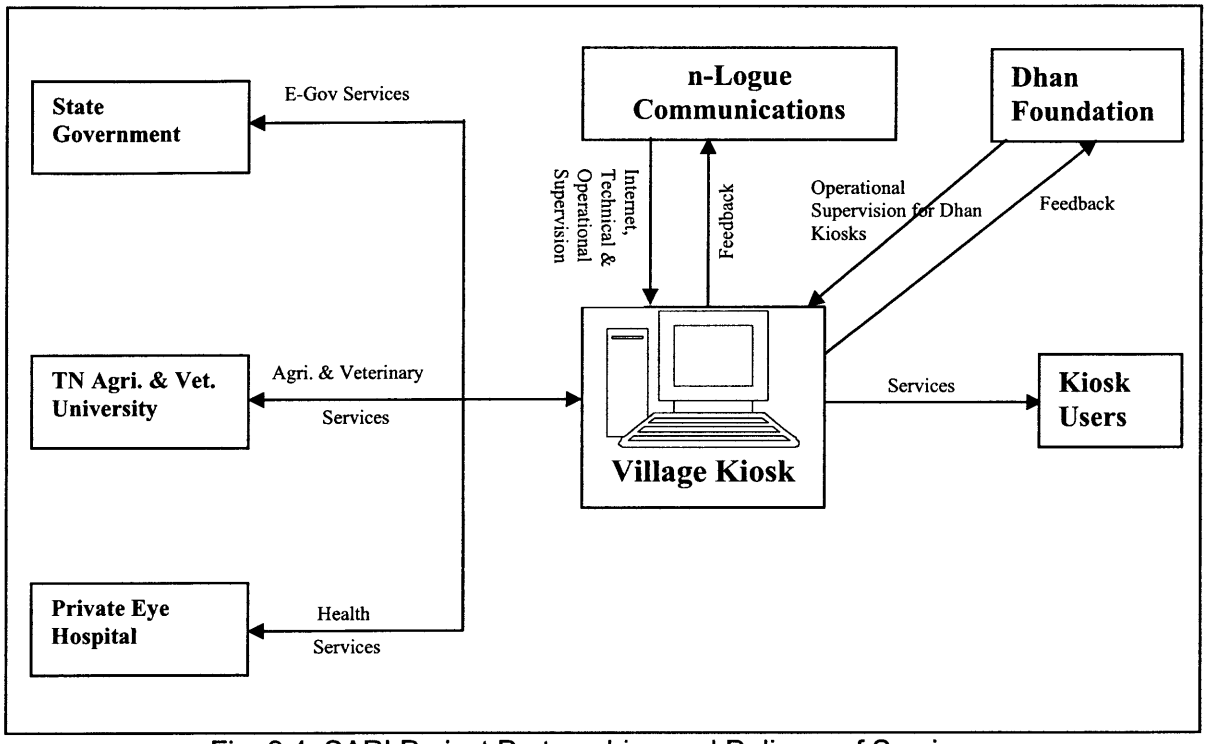

Fig. 2.4: SARI Project Partnerships and Delivery of Services

2.5 Implementation of the Project

The kiosks are run by two kinds of operators: 22 are run by local self-employed village entrepreneurs under the direct supervision of n-Logue, and the remaining 19 are run by a local NGO called the Dhan Foundation. In the case of the n-Logue kiosks, the entire equipment is loaned to the operator by n-Logue Communications through a tie-up with a public sector bank. Under an existing government subsidy scheme, the entrepreneur gets a subsidy of 15% on the

principal loan amount. For the Dhan kiosks, the entire costs of setting up the kiosks are borne by the NGO and it also appoints its own operators. All operators are trained by n-Logue in technical and operational aspects. Slightly less than half (46.3%) of the operators in all the 41 kiosks are women, though this percentage (63.2%) is significantly higher in the Dhan kiosks when compared to that (31.8%) in the n-Logue kiosks. Dhan officials indicate that this is due to a conscious approach adopted by them to appoint more women operators.

In addition to appointing more women operators, Dhan has also adopted a specific policy of reaching the poor and the SC/ST households in the village. Discussions with the Dhan officials reveal that operators are specifically asked to canvass among the poor and the SC/ST households regarding the kiosk services offered. Dhan kiosks also offer two additional services: e-Post, an inter-village postal service through which printed copies of emails are delivered to any person in a village having a Dhan kiosk; and e-Commerce, which allows a user to put any household item for sale online among the Dhan kiosk villages.

Kiosks are mostly located in village market areas (Fig. 2.5), usually close to where the rural mid and upper income (defined as those households earning more than Rs. 1,000 per month) households live. This enables uniform access to the kiosks by all households in the village. However, due to historical reasons, different communities (castes or caste groups) have separate residential colonies in most of the villages, and almost invariably, the Dalit households are located far away from the main village market areas. This residential segregation is mostly by community, and often cuts across the income groups. This appears to be an important factor in significantly lower patronage of the kiosks by the Dalits when compared to that by the other communities. This was also confirmed through my discussions with the kiosk operators and users, and my own observations in these villages.

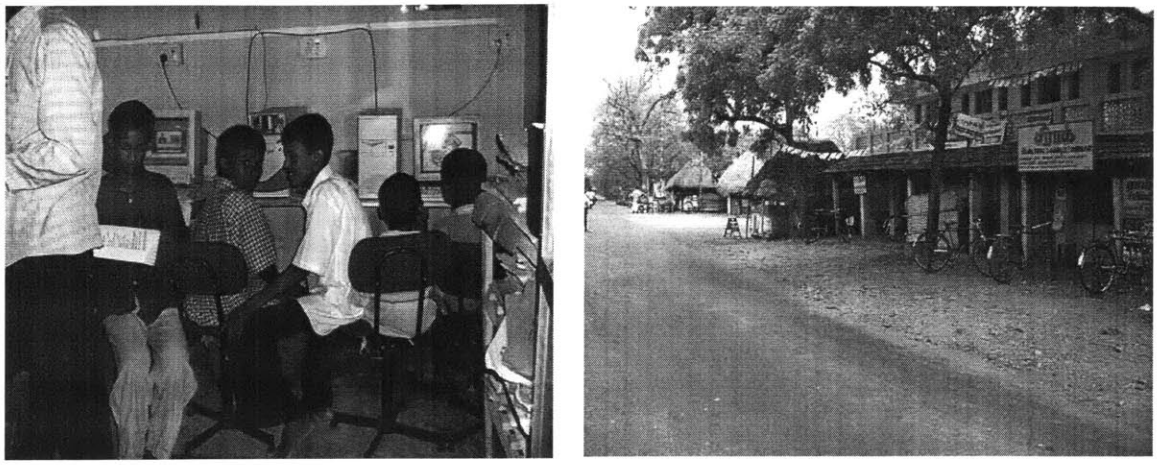

Fig. 2.5: SARI Project Kiosks. The right photograph shows the kiosk in the village market area in Thaniyamangalam village.
(Photos: Rajendra Kumar)

2.6 Commercial Viability of the Kiosks

Discussions with the SARI project officials and the kiosk operators reveal that in order to be commercially viable, a kiosk should earn a total revenue of at least Rs. 3000/month. As per this criterion, so far only around 10 kiosks in the entire project have been commercially successful. While some kiosks, such as the one at Keelavalavoo, have reported gross revenues of upto Rs. 10,000 per month, most of the kiosks report total revenues of around Rs. 1500-2000 per month. In general, Dhan kiosks report lower revenues when compared to the n-Logue kiosks, but this may be due to the fact that these kiosks had no internet connection from Nov. 2002 to April 2003 and consequently were unable to offer several services such as e-government, browsing, email, etc. Financial viability of the kiosks is a major issue for both the operators and the project officials.

3. SURVEY METHODOLOGY

I adopted a combination of quantitative and qualitative techniques for conducting this study. The quantitative techniques included data collection through structured interviews of the kiosk users and operators; available data from village level household surveys conducted in other studies; and data from census records and government records for e-government services. Qualitative techniques involved detailed interviews with government officials involved in providing e-government services, the kiosk operators, and the SARI project personnel to gain an insight into the objectives, institutional aspects and processes behind the launch and implementation of the project.

3.1 Quantitative Methods

I conducted a detailed survey of kiosk users covering a total of 132 randomly selected users spread over five villages. This survey collected detailed data on demographic indicators of the users, kiosk services utilized and their impact, and the potential for providing additional kiosk services. The users were interviewed using a detailed bilingual (Tamil and English) questionnaire (the English version of the questionnaire is available in Appendix D). The villages themselves were selected based on a combination of factors, such as the duration of operation of the kiosks, and availability of other data sources for making a comparative analysis. Out of the five villages selected, two villages (Ulagapitchampatti and Thaniyamangalam) have n-Logue kiosks, while the other three (Keelaiyur, Thaniyamangalam, and Kidaripatti) have Dhan kiosks. This was done in order to analyze and explain any differences in the impact of the kiosks run by these two organizations. The user interviews in these five villages were conducted with the

help of 13 graduate students hired from the Madurai Kamaraj University. The field study for the project was conducted during June-August 2003.

3.2 Qualitative Methods

I held detailed discussions with the officials from both the SARI Project and n-Logue Communications regarding the objectives behind, and the actual implementation of, the project. I also conducted detailed interviews with kiosk operators in 13 villages to understand the actual operation of the kiosks and how the services are delivered to the users. This helped me in understanding how the kiosk usage is affected by factors such as its location in the village, whether the operator is male or female, and what additional services, if any, could be offered and how the existing ones could be improved.

As e-government services form a major component of the kiosk services, I also had detailed discussions with several government officials including the state Secretary of the Information Technology Department, the District Collector of Madurai, and the Taluk and other government department officials at Melur. I also had discussions with several elected village representatives in these villages in order to understand the level of awareness and support among them for the project.

3.3 Other Data Sources

In order to carry out a full quantitative analysis of the socioeconomic impact of the kiosks, I collected data from several other sources: Census of India 2001, Taluk office records on the e-government and all other major services delivered, and data from a household survey conducted by the SARI Project in 2003 in four kiosk villages. The other sources of data included published reports and papers on the project.

3.4 Data Analysis

This study relies on a deep analysis of both quantitative and qualitative data collected to determine the social and economic impact of the kiosks. I used statistical techniques of data analysis such as one-sample inference for means and proportions to conduct a comparative analysis of the socioeconomic profile of the kiosk users with that of their respective village communities and draw statistically valid conclusions about the impact of the kiosks. I also used a multivariate regression model to isolate the impact of the kiosks on the delivery of government services. Finally, I analyzed the qualitative data collected to understand the institutional aspects behind the project, the partnerships developed with various agencies, and the awareness and understanding of the project among the users and the village community.

4. THE SURVEYED VILLAGES AND KIOSKS

Before discussing the impacts of the kiosks on the village communities, it is useful to understand the general demographic characteristics of the villages and how the kiosks have been functioning in these communities. Fig. 4.1 shows the locations of the surveyed villages, which are all located within a distance of less than 10 kilometers from the Melur town and are easily accessible through public transport.

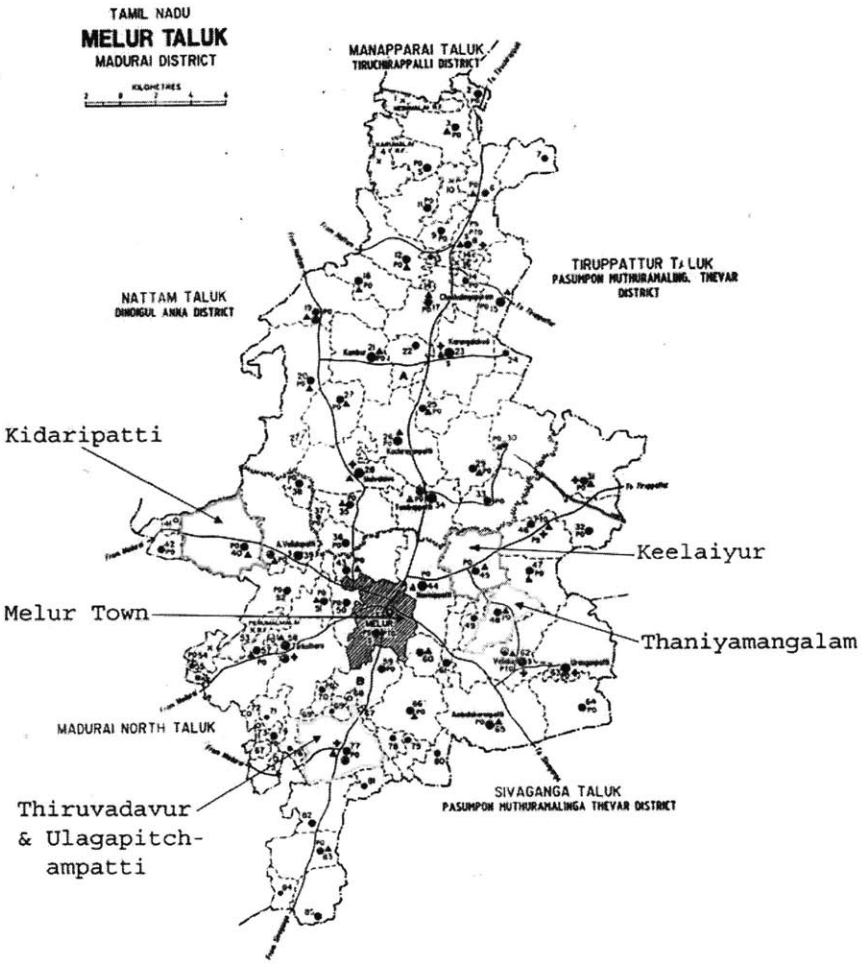

Fig. 4.1: Location of the Surveyed Villages in Melur
(Source: Census of India, 1991)

In the following sections, I briefly discuss the general demographic characteristics of each village and the general operational aspects of the kiosks.

4.1 Ulagapitchampatti

Located 7 kilometers south-west of Melur, this hamlet is a part of the main Thiruvadavur revenue village. The population of the hamlet is 2,397 (SARI Household Survey, 2003). 73.3% of the households in the hamlet belong to the backward castes, 23.6% belong to the SC/ST category, and the rest comprise the minorities (Christians and Muslims) (SARI Household Survey, 2003). Literacy rate in the entire revenue village is 71% (Census, 2001). Paddy cultivation is the major occupation of the people here with a small number of people employed in a nearby grinder manufacturing unit.

The kiosk in this hamlet is located in the house of a local agriculturist and has been functioning since May 2002. His daughter, Ms. S. Sukanya, is the operator of the kiosk. She stated that she has made extensive efforts in personally contacting all the households in the hamlet and explaining to them the benefits of the services offered at the kiosk. The location of the kiosk seems to be easily accessible to all the households within this hamlet.

During June 2003, the kiosk received 43 distinct users, and earned a gross income of Rs. 1328. Unlike most other kiosks, computer education is not the biggest source of revenue here (Table 4.1). Typing and printouts are the biggest sources of revenue, followed by computer education and browsing.

Table 4.1: Ulagapitchampatti Kiosk Revenue during June 2003

Service	Revenue (Rs.)	% of Total
Computer Education	250	18.8
Typing, Printouts	315	23.7
Browsing	230	17.3
E-Government Services	90	6.8
E-mail	30	2.3
Photo Studio	20	1.5
Health Services (Eye Check up)	40	3.0
Other (exam results, school practicals, games, movies, etc.)	353	26.6
Total	**1328**	**100**

Source: Data From the Kiosk Operator
Author: Rajendra Kumar

Though the number of users here appears to be relatively high, the proportion of SC/ST users is quite low (2.9%). This appears to be due to the location of the kiosk far away (over a kilometer) from the SC colony. However, the kiosk does get a number of users from the Sri Lankan Refugee Camp, which is also located at about the same distance from the kiosk. This points to the importance of location of the kiosk in reaching the SC households as they still face psychological barriers in freely coming to the areas inhabited by the other communities in the village. This seems to be true here as the operator stated that she had done canvassing among the SC households also.

Interviews with the SARI project officials and my own observations at the kiosk reveal that this is one of the most successful kiosks in the entire project in terms of the number of users. However, this appears to be an exception due to the extraordinary efforts made by the kiosk operator in reaching out to the people to create awareness about the kiosk services.

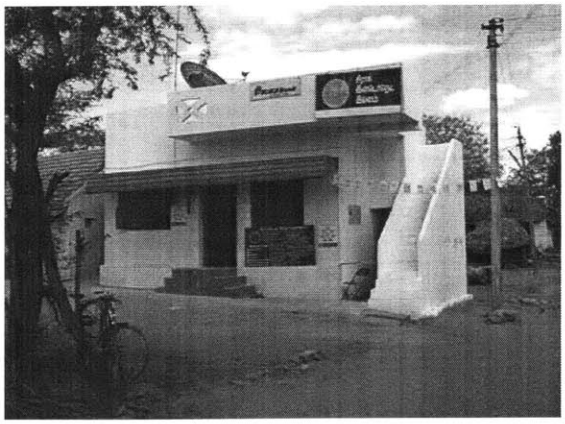

Fig. 4.1: Village kiosk in Ulagapitchampatti
(Photo: Rajendra Kumar)

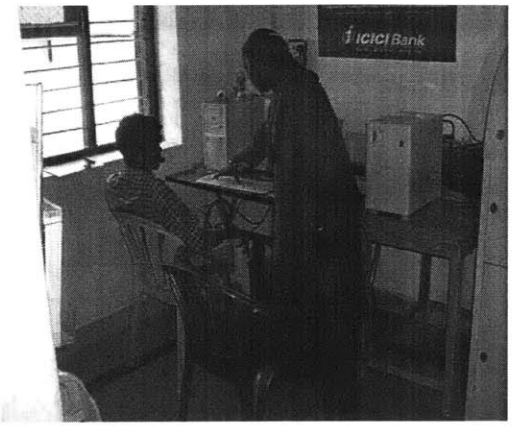

Fig. 4.2: Operator assisting a user at Ulagapitchampatti
(Photo: Rajendra Kumar)

4.2 Thiruvadavur

Located just 1.5 kilometers north-east of Ulagapitchampatti, the kiosk here is located in a rented premises in the main village market area. With 1,268 households and a population of 5,147 (Census, 2001), this village is relatively large. Majority of the population belongs to the backward castes with the SC population being 18.6% (Census, 2001). The literacy rate in the village is 71% (Census, 2001). Agriculture is the main occupation here.

The kiosk here is owned by the Dhan Foundation. The operator is Ms. Parvathi. It was started in June 2002, but had no internet connectivity during Nov. 2002 - April 2003. During June 2003, the kiosk had 36 distinct users, and earned a gross revenue of Rs. 831. Computer education was the biggest source of revenue, followed far behind by browsing, checking exam results, games, etc. (Table 4.2).

Table 4.2: Thiruvadavur Kiosk Revenue during June 2003

Service	Revenue (Rs.)	% of Total
Computer Education	650	78.2
Typing, Printouts	20	2.4
Browsing	55	6.6
Astrology	10	1.2
Games	35	4.2
Checking Exam. Results	40	4.8
School Practical	6	0.7
Health Services (Eye Check up)	10	1.2
Other	5	0.6
Total	**831**	**100**

Source: Data From the Kiosk Operator
Author: Rajendra Kumar

Owing to its location in the main market area, the kiosk seems to be easily accessible to all communities in the village. However, the SC hamlets are located relatively far away (over one kilometer) from the main market area, which partly explains the low proportion (7.7%) of SC users at this kiosk. This is despite the fact that the operator has made extra efforts in reaching out to the SC households as per the stated policy of Dhan. This aspect again points to the importance of location of the kiosk in reaching the socially disadvantaged communities.

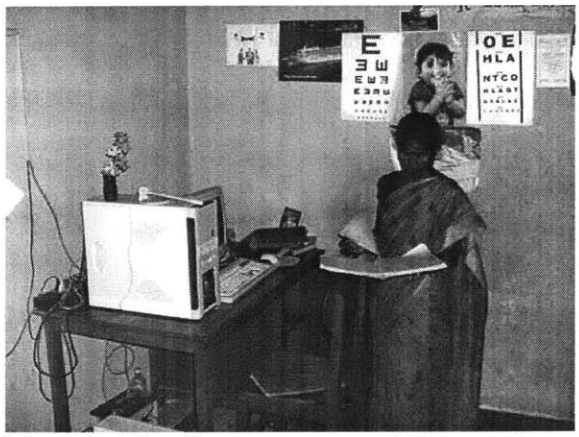

Fig. 4.3: The Kiosk operator at Thiruvadavur.
(Photo: Rajendra Kumar)

4.3 Keelaiyur

This again is a relatively large village located around 3 kilometers north-east of Melur town. The village has 1,258 households and a population of 5,141 (Census, 2001), consisting mainly of the backward castes but with a relatively larger SC population (compared to that for the Melur taluk as a whole) of 23.9%. The literacy rate in the village is 71.6% (Census, 2001).

The kiosk in this village is located right on the main road on the opposite side of the main SC hamlet. It is owned by the Dhan Foundation and is operated by Mr. Satish Kumar, a local youth. It has been functioning since December 2001, but like other Dhan kiosks, had no internet connectivity from November 2002 to April 2003.

Fig. 4.4: Entrance to Village kiosk at Keelaiyur
(Photo: Rajendra Kumar)

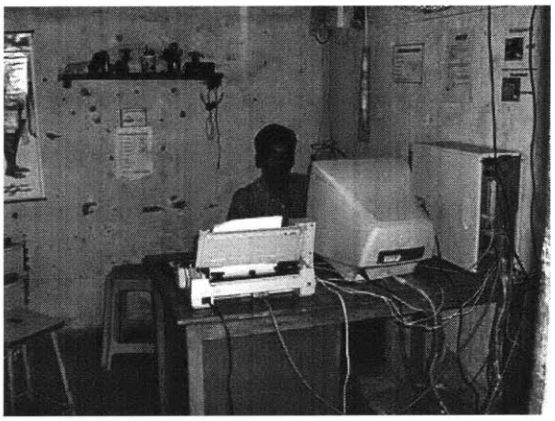

Fig. 4.5: The Kiosk Operator at Keelaiyur
(Photo: Rajendra Kumar)

During June 2003, the kiosk had 24 distinct users and earned a gross revenue of Rs. 1550 (Table 4.3). Computer education was the biggest earner, followed by typing and printouts, and browsing.

Table 4.3: Keelaiyur Kiosk Revenue during June 2003

Service	Revenue (Rs.)	% of Total
Computer Education	1050	67.7
Typing, Printouts	285	18.4
Browsing	125	8.1
Astrology	50	3.2
Birth Certificate	15	1.0
Health Services	10	0.6
School Practical	10	0.6
E-Post	5	0.3
Total	**1550**	**100**

Source: Data From the Kiosk Operator
Author: Rajendra Kumar

This kiosk is among the very few kiosks in the entire project attracting a high percentage of SC/ST users (65%). The location of this kiosk close to the SC/ST hamlet seems to partially explain this phenomenon.

4.4 Thaniyamangalam

Located 2 kilometers south-east of Keelaiyur, this is a relatively small village with 973 households and a population of 3,748 (Census, 2001). However, the proportion of SC population is relatively high at 24.0%. The proportion of the SC population is even higher at 47.3% in the hamlets close to the kiosk from where the bulk of the kiosk users come (SARI Household Survey, 2003). The literacy rate in the village is 75.8% (Census, 2001).

The kiosk here is located on the main road, in the main village market area. It was started in Jan. 2002. It is owned by Mr. Razzak, but operated by Ms. Nargis. The main SC hamlets are located over 1.5 kilometers away from the kiosk.

During June 2003, the kiosk had 18 distinct users and earned a gross revenue of Rs. 905. The revenue during this month appears to be particularly low, considering the fact that during May 2003, the kiosk reported a gross revenue of Rs. 2,855. This particularly low figure may also be due to non-reporting of some items in the income accounts. Table 4.4 shows the break-up of the revenue for June 2003 from various services.

Table 4.3: Thaniyamangalam Kiosk Revenue during June 2003

Service	Revenue (Rs.)	% of Total
Computer Education	650	71.8
Typing, Printouts	60	6.6
Browsing	135	14.9
Checking Exam. Results	30	3.2
Checking Passport Status	30	3.2
Total	**905**	**100**

Source: Data From the Kiosk Operator
Author: Rajendra Kumar

In terms of patronage by SC/ST users, this kiosk had 10.3% of users from this community during May and June 2003. Location of the kiosk away from the SC/ST hamlets seems to partially explain this low percentage.

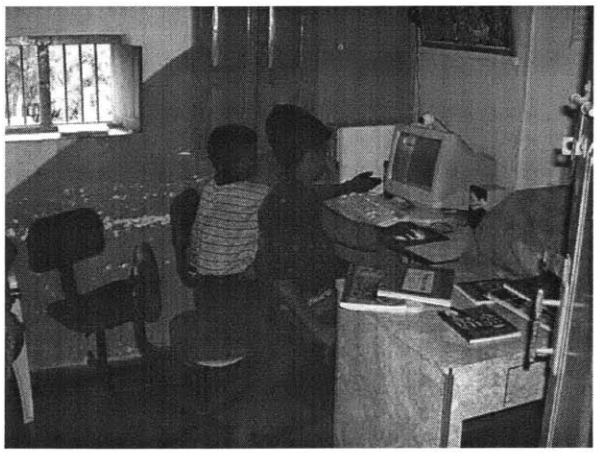

Fig. 4.6: Kiosk at Thaniyamangalam
(Photo: Rajendra Kumar)

4.5 Kidaripatti

Located around 8 kilometers north-west of Melur town, this is a relatively large village with 1,019 households and a population of 4,504 (Census, 2001). The SC population is relatively low at 16.2% (Census, 2001). Even in the kiosk catchment area, the SC population is only 21.4% (SARI Household Survey, 2003). The literacy rate in the village is 60.9% (Census, 2001).

The kiosk here is owned by the Dhan Foundation and is operated by a Dhan appointed operator, Ms. Selvi. The kiosk is located in a rented building close to some shops on the main village road (Figs. 4.7 and 4.8). It was started in Aug. 2002, but had no internet connectivity during Nov. 2002 to April 2003.

Fig. 4.7: Entrance to Village kiosk at Kidaripatti (behind the front shop, where a person is seen standing with some papers in hand)
(Photo: Rajendra Kumar)

Fig. 4.8: The Kiosk Operator at Kidarippati
(Photo: Rajendra Kumar)

This kiosk reported a gross revenue of only Rs. 620 during May 2003 (figures for June 2003 were not recorded in the income register) from 24 distinct users. The revenue reported is particularly low, perhaps due to non-recording of several payments received in the income account. Again, computer education is the main revenue earner here (Table 4.5).

Table 4.3: Kidaripatti Kiosk Revenue during May 2003

Service	Revenue (Rs.)	% of Total
Computer Education	300	48.4
Creating email id	20	3.2
Browsing	35	5.6
Checking Exam. Results	250	40.3
Games	15	2.4
Total	**620**	**100**

Source: Data From the Kiosk Operator
Author: Rajendra Kumar

Though the village has relatively low SC/ST population, I found the proportion of these users to be very high here (61.1%). This appears to be mainly due to the relative closeness of the kiosk to the SC/ST households and the extra efforts made by the operator in reaching out to them.

5. SOCIAL IMPACT

As the kiosks have brought a new technological innovation to their communities, it is useful to examine how they have been impacting them socially, especially their impact on the existing socioeconomic inequalities. It is also useful to examine the extent of diffusion of this intervention in their communities. In this chapter, I analyze and present results on these aspects of the project.

The methodology that I use here is to analyze the overall reach of the kiosks in their communities and then to compare the socioeconomic profile of the kiosk users with that of their communities. Overall reach of the kiosks in their communities has a direct bearing on their social impact. I estimate this by estimating the total number of users and comparing it with the overall village population and the number of households. Then I examine whether the kiosks have served mainly the relatively more educated and well-off sections of the village community or whether they have also succeeded in attracting the socially and economically disadvantaged communities. I analyze this by comparing the kiosk users with their respective village communities across seven major demographic characteristics: age, gender, religion, community, income, ownership of household assets, and educational attainment. The statistical analysis of the data on these characteristics using one-sample inference for means and proportions is shown in the Appendix A. I also examine whether the kiosks have played a significant role in increasing computer and internet awareness among the people. If this is true, it would indicate that the kiosks have been successful in reaching out to those sections of the community which otherwise would not have been aware of computers and internet in the absence of the kiosk.

I present and discuss the analysis and the results below.

5.1 Overall Reach of the Kiosks

On the whole, the kiosks seem to be reaching around 4-15% of the village population and around 10-25% of the village households. This means that majority of the village community is yet to benefit from the kiosk services. I explain this analysis below for each of the kiosks.

Ulagapitchampatti: This kiosk has the maximum reach in the village community among all the kiosks surveyed. Discussions with the kiosk operator reveal that this kiosk has been getting around 20-25 distinct users per month on an average. Taking this figure, around 260-325 distinct users would have used the kiosk in its 13 months of operation (as of June 2003). As a proportion of the hamlet population, this translates into an overall reach of around 11-14% of the community (reliable figure for the total number of households in the hamlet is not available).

Thiruvadavur: The kiosk operator stated that this kiosk has been getting, on an average, around 20 distinct users every month. Taking this figure, the total number of users at this kiosk would be around 240 in its 12 months of operation till June 2003. This implies that this kiosk has reached around 4.7% of the village population and around 19% of the village households.

Keeliayur: This kiosk has been getting around 12-14 distinct users every month. Using this figure, it has served a total of 216-252 users in its 18 months of operation till June 2003. This indicates an overall reach of 4.2-4.9% in the village population and 17.2-20% among the village households.

Thaniyamangalam: This kiosk also has been getting around 12-14 distinct users every month. Using this figure, around 250 distinct users would have visited the kiosk in its 18 months of operation as of June 2003. This means that the kiosk has so far reached 6.7% of the village population and 25.7% of the village households.

Kidaripatti: This kiosk has been getting around 12 distinct users every month (this figure was lower in the beginning). Taking this number as the average, around 120 distinct users in total would have used the kiosk in its ten months of operation. This implies that the kiosk has reached 2.7% of the village population and 11.8% of the village households since its inception.

5. 2 Age Distribution

An overwhelming majority of the kiosk users is young. Most of them are below 30 years (Fig. 5.1). The average age of the users is 20 or below in four of the five villages with 95% confidence interval ranging between 11.8 to 23.2 years (Tables A.1 to A.5). With the sole exception of Ulagapitchampatti, over 90% of the users are below 30 years. This indicates that the kiosk users are statistically significantly younger than their respective village communities. The significantly different age profile in Ulagapitchampatti, when compared to that in the other four villages, appears to be due to the extra efforts made by the operator in creating awareness about the kiosk services through canvassing among all sections of the village population.

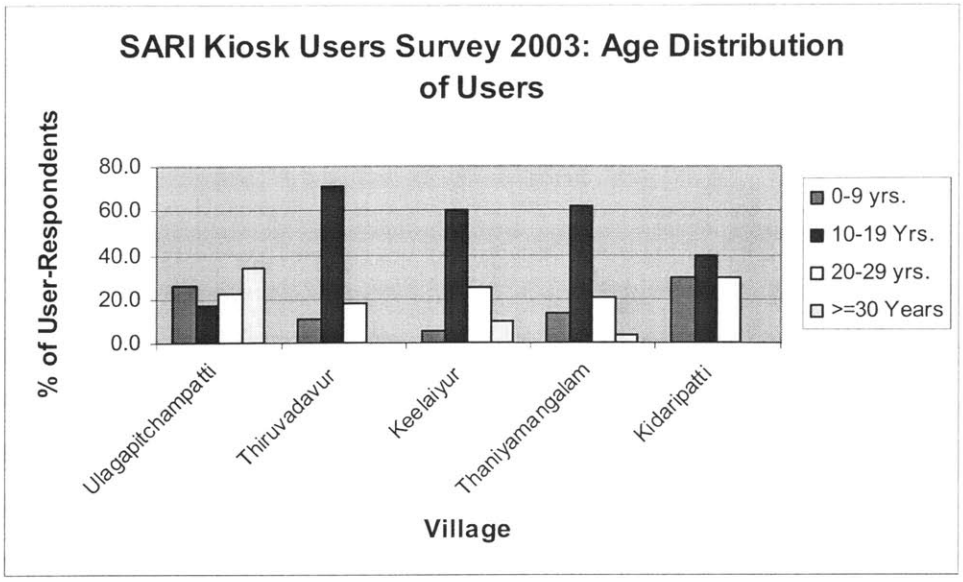

Fig. 5.1: Age Distribution of Kiosk Users
(Source: SARI Kiosk Users Survey 2003)
(Author: Rajendra Kumar)

5.3 Gender

Most of the kiosk users are male (Fig. 3.2). The proportion of male users varies from 65.5% in Thaniyamangalam to 90% in Kidaripatti and is far higher than the percentage of males in the village population (Tables A.1 to A.5 in Appendix A). This again indicates a significantly different kiosk user profile when compared to that of their respective village communities. Most of the women users at the kiosks are girl students who come for computer education.

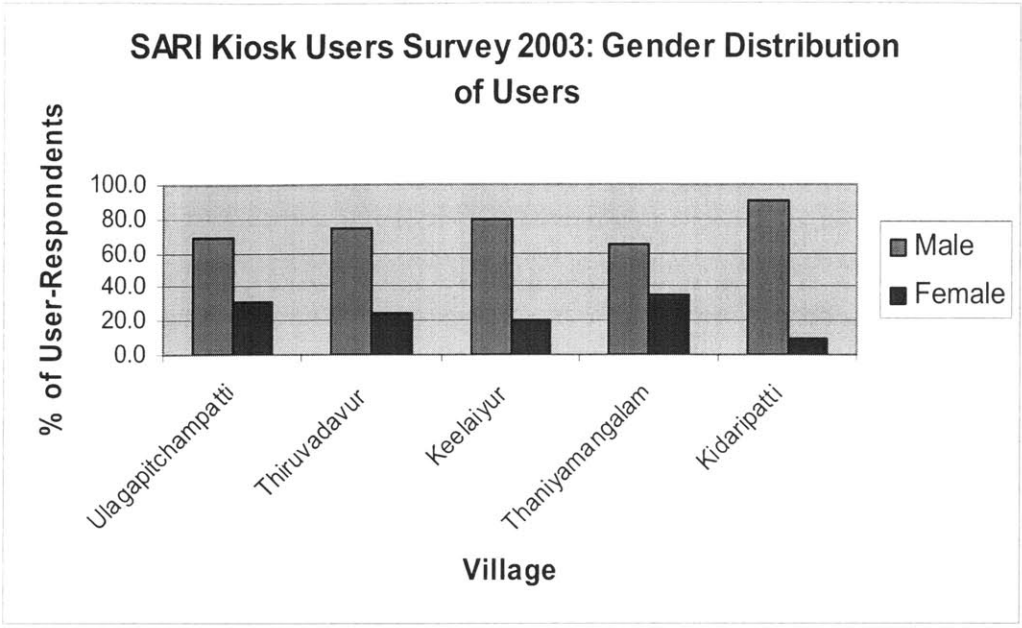

Fig. 5.2: Age Distribution of Kiosk Users
(Source: SARI Kiosk Users Survey 2003)
(Author: Rajendra Kumar)

5.4 Religion

All the kiosk users belong to the majority religion, except in two kiosks, Ulagapitchampatti and Thiruvadavur (Fig. 5.3). In these two villages, the proportion of minority users is not statistically different from that in the kiosk catchment area population (Tables A.1 and A.2). In Thaniyamangalam, the kiosk catchment area population itself contains only 0.2% minorities (Table A.4). However, the remaining two kiosk catchments, Keelaiyur and Kidaripatti, have significant minority population (4.1% and 19.2% respectively) but still have no minority kiosk users. This may be due to inadequate efforts made by these operators in canvassing among these households.

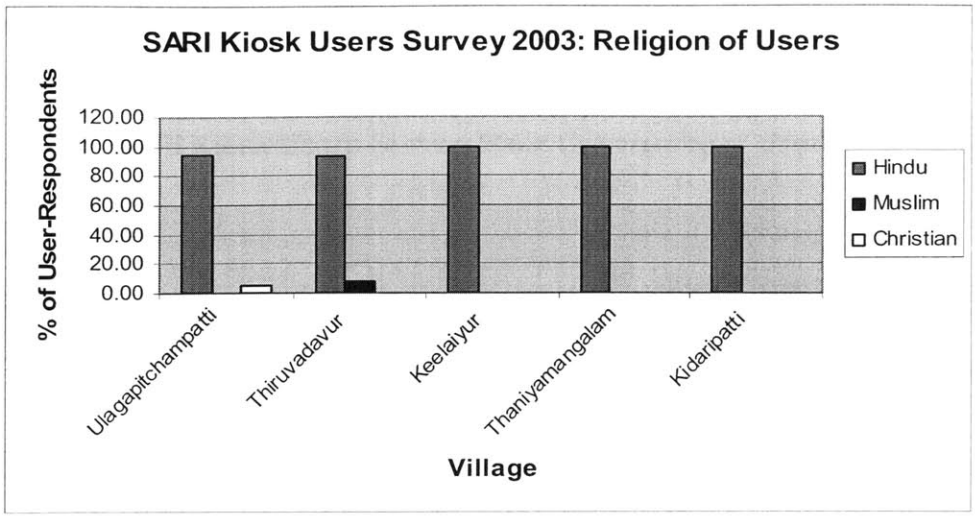

Fig. 5.3: Distribution of Religion of Kiosk users
(Source: SARI Kiosk Users Survey 2003)
(Author: Rajendra Kumar)

5.5 Community of Users

Most of the users belong to the numerically dominant community in these villages, namely, the backward castes (BC) (Fig. 5.4). In three villages (Ulagapitchampatti, Thiruvadavur, and Thaniyamangalam), the proportions of SC users are statistically significantly lower when compared to those in the kiosk catchment population (Tables A.1, A.2 and A.4). However, in Keelaiyur and Kidaripatti, majority of users belongs to SC and the proportions are statistically significantly higher compared to those in the catchment population. Location of these two kiosks closer to the SC households appears to be an important factor in attracting more SC users. These are also run by the Dhan Foundation, which, as stated earlier, has adopted a policy of reaching the SC and poor households through vigorous canvassing. However, as stated before, the same is not true for Thiruvadavur, which is also run by the same NGO. Thus, location of the kiosk seems to play a more important role, compared to just canvassing, in attracting SC users.

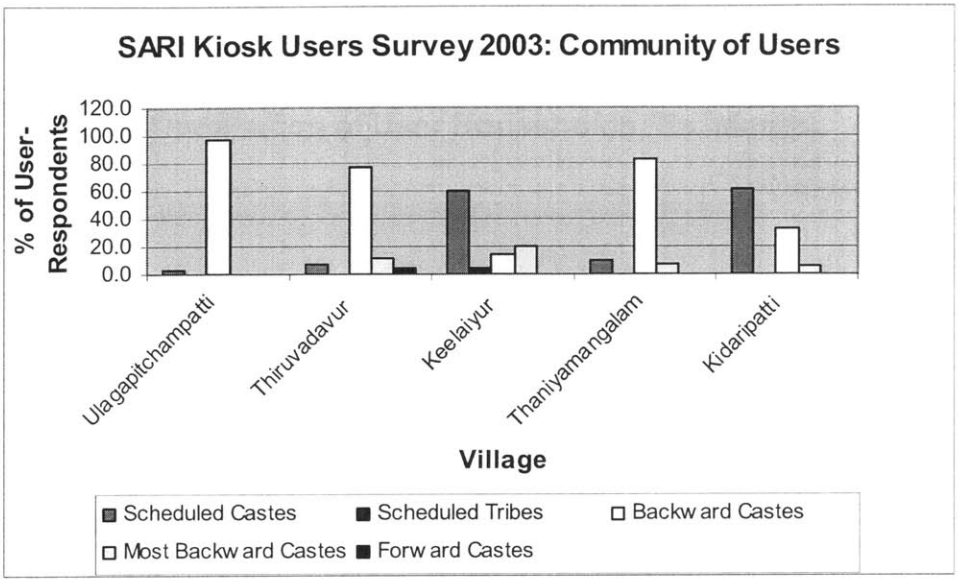

Fig. 5.4: Community of Users
(Source: SARI Kiosk Users Survey 2003)
(Author: Rajendra Kumar)

5.6 Income Levels

Most of the user households are in the middle to upper income groups, except in one village, Ulagapitchampatti (Fig. 5.5). Only Ulagapitchampatti seems to attract a large proportion (78.8%) of low income users (those with monthly household incomes of Rs. 1000 or below) (Table A.1). In the other four villages, this proportion varies from 15.4% in Thiruvadavur to 33.3% in Thaniyamangalam. Again, the significantly higher proportion of low income users in Ulagapitchampatti appears to be due to the extra efforts made by the kiosk operator in contacting the poor households in the village. As no reliable data on actual income levels of the kiosk catchment area population is available, it is not possible to statistically compare the income levels of kiosk users with that of their respective village communities. But qualitative evidence (discussions with kiosk

operators and SARI project officials) points to a generally higher economic status of the users when compared to that of their communities.

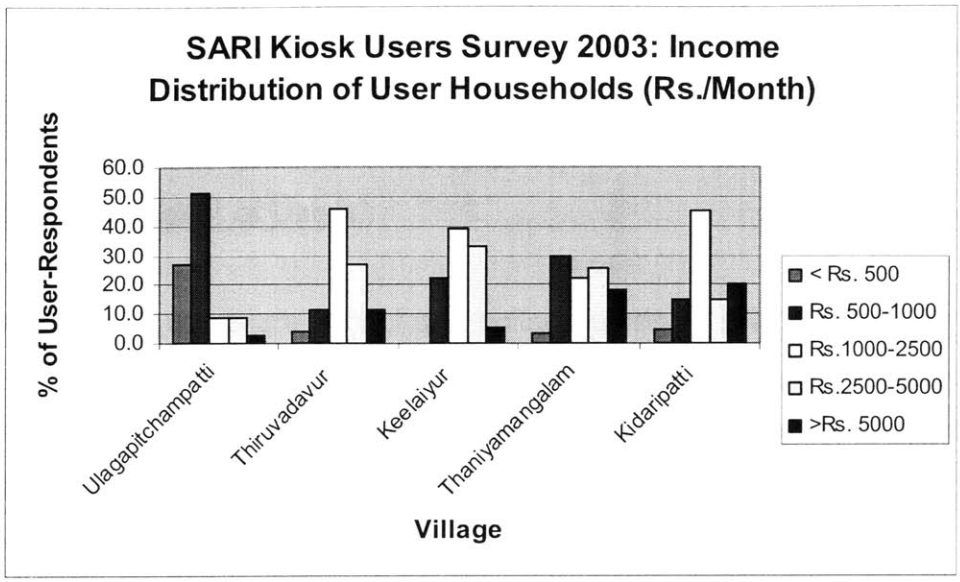

Fig. 5.5: Income Distribution of Kiosk Users
(Source: SARI Kiosk Users Survey 2003)
(Author: Rajendra Kumar)

5.7 Ownership of Household Assets

In the absence of reliable income data, I used the ownership of household assets to make a comparative analysis of the economic status of the two populations. As is evident from the Tables A.1 to A.5, the kiosk users do seem to enjoy a higher economic status as they own more household assets compared to that of their respective communities, though the extent of differences vary in each village. For example, in Keelaiyur, the kiosk users are not statistically different from their community in this regard, while in Ulagapitchampatti and Kidaripatti, they seem to be different only on a few indicators, such as in proportion of cable TV ownership in Ulagapitchampatti and in 2-wheeler ownership in both the villages. In the other two villages, the differences are wider. In Thiruvadavur, higher proportions of kiosk users own 2-wheeelers, color TVs and cable TVs, and

comparatively far lower percentages of them live in thatched houses or in houses without electricity. This shows the higher economic status of the users compared to that of their community. The sharpest differences emerge in Thaniyamangalam, where far higher proportions of kiosk users own telephones, radio/transistors, color and cable TVs, and far lower proportions live in thatched houses and in houses without electricity.

5.8 Educational Level of Users

Most of the kiosk users are school and college students (Fig. 5.6). None of the users are illiterate, except in two villages, Ulagapitchampatti and Keelaiyur (Tables A.1 and A.3). Out of these two villages, only in Ulagapitchampatti, the proportion of illiterate users seems to statistically match the overall illiteracy rate in the village. This aspect is important as the overall literacy rates in these villages vary from a low of 60.9% in Kidaripatti to a high of 75.8% in Thaniyamangalam (Census of India, 2001). Thus, we can say that the kiosk users are more literate and educated than their communities.

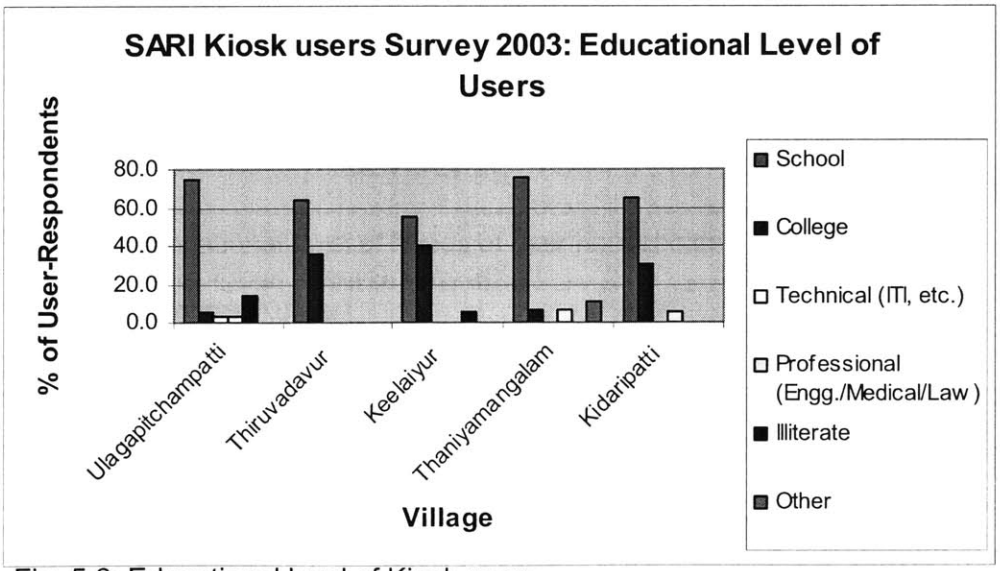

Fig. 5.6: Educational level of Kiosk users
(Source: SARI Kiosk users Survey 2003)
(Author: Rajendra Kumar)

In addition to the educational attainment of the actual kiosk users, I also compared the educational attainment of the heads of the user households with that of their communities (Fig. 5.7). The results show an almost similar trend with respect to illiteracy rate among the heads of the user households, with only two villages (Ulagapitchampatti and Keelaiyur) showing statistically the same profile for the heads of user households when compared to that of their respective communities (Tables A.1 to A.5). This again shows that, in general, the kiosks are serving mainly the literate and the better educated households in the village.

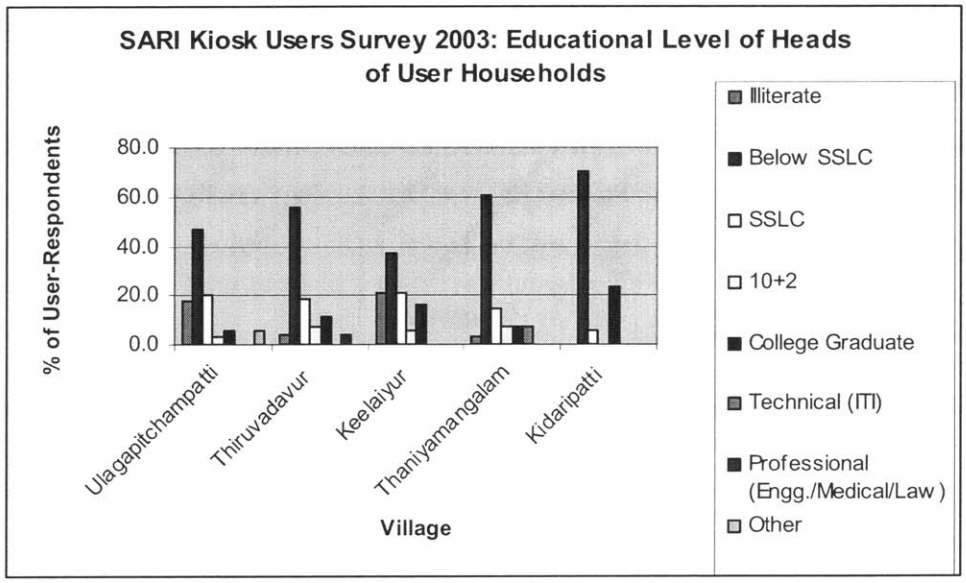

Fig. 5.7: Educational level of heads of user households
(Source: SARI Kiosk users Survey 2003)
(Author: Rajendra Kumar)

5.9 Computer and Internet Awareness

To examine whether the kiosks have succeeded in reaching out to new users, I analyzed the source of awareness of the users about computers and internet.

The analysis (Fig. 5.8) indicates that the kiosk was the only source of computer and internet awareness for at least 30% or more of the users in all villages, with this proportion being 50% or more in two villages. This indicates that the kiosks have succeeded in creating awareness about this technology in their communities and in attracting new users. These users would not have become aware of computers and internet in the absence of the kiosk.

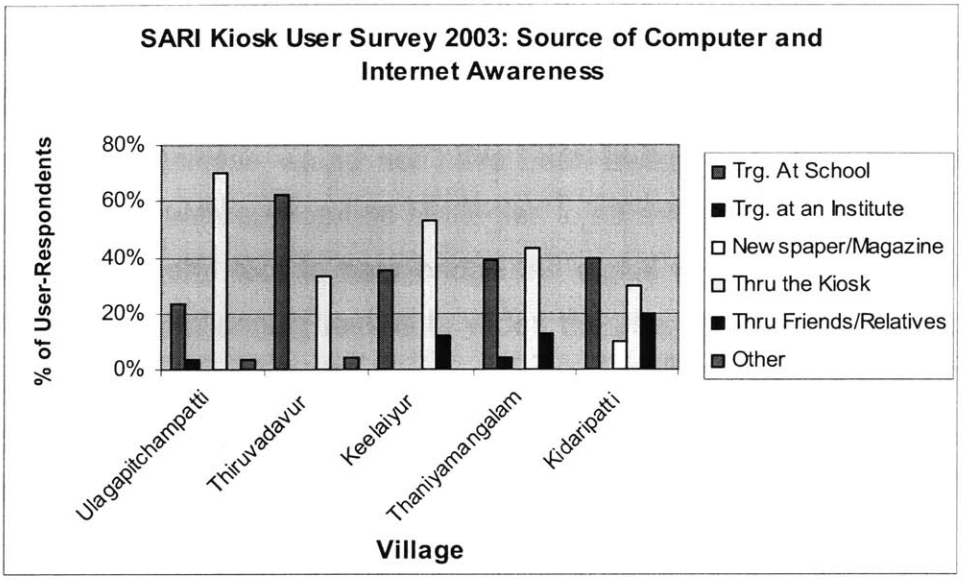

Fig. 5.8: Source of Computer and Internet Awareness
(Source: SARI Kiosk users Survey 2003)
(Author: Rajendra Kumar)

5.10 Conclusion

The analysis above indicates that the kiosk users have a statistically significantly different socioeconomic profile when compared to that of their respective village communities for all of the seven demographic variables, though the differences are not uniform in all the five villages. This indicates that the kiosks are serving mainly those sections of their communities which are relatively more educated, enjoy a higher social status, and are economically better off. In this sense, they

may be leading to exacerbation of the so-called 'digital divide' within their communities.

However, this result needs to be interpreted in its appropriate context. The kiosks have brought ICTs to these communities who had no access to them earlier. In this sense, they help in narrowing the existing digital divide by increasing the access to, and use of, these technologies by new communities. However, within these communities, it is benefiting those who are relatively more educated and economically better off. However, as discussed before, there is evidence that they have helped in creating awareness about computers and internet among new users who otherwise would not have been aware of these technologies. This suggests that, with appropriate strategies to attract more new users, kiosks may serve as a useful tool to help bridge the digital divide even *within* these communities. The challenging task is to widen the user base by reaching out to the socially and economically disadvantaged communities. This is closely linked to how a new innovation diffuses in a community. I examine this aspect in chapter seven.

6. GOVERNANCE AND ECONOMIC IMPACTS

I analyzed the governance impact of the kiosks mainly in terms of their impact on demand and delivery of various services when compared to the same for traditional modes of delivery of the same or similar services. One major category of services that I analyzed was e-government services, as adequate data was available to make a comparative analysis. I also analyzed their economic impacts by examining whether they have provided services at a comparatively lower cost, and whether they have led to creation of new economic and employment opportunities in their communities. I present the analysis and the results below.

6.1 E-Government Services

The major e-government services that the kiosks have offered include applying for birth, death, community, and income certificates, old age pensions, and sending general grievance petitions to government officials. They have specifically targeted at applications for birth and death certificates, as these were the services approved by the state government to be offered through kiosks (mainly due to the recent computerization of official birth and death records). The results of the analysis indicate the following:

(i) the kiosks have led to a statistically significant increase in the number of applications (per 1000 population) for birth certificates and old age pensions;

(ii) they have also led to significant reductions in time, effort, and total costs for the applicants when compared to the same in availing the same services traditionally.

I analyzed the impact of the kiosks by comparing the demand for the above mentioned services through traditional modes with the same after they were offered through kiosks. For this, I compared the number of applications received in each category in the Taluk office from both the kiosk and the non-kiosk villages and tried to isolate the impact of the kiosks by controlling for various factors that could affect the applications received. The overall comparative analysis of the kiosk and the non-kiosk villages is shown in the Fig. 6.1. As can be seen, average number of applications is higher in the SARI villages for the following categories: death certificates, old age pensions, and birth certificates.

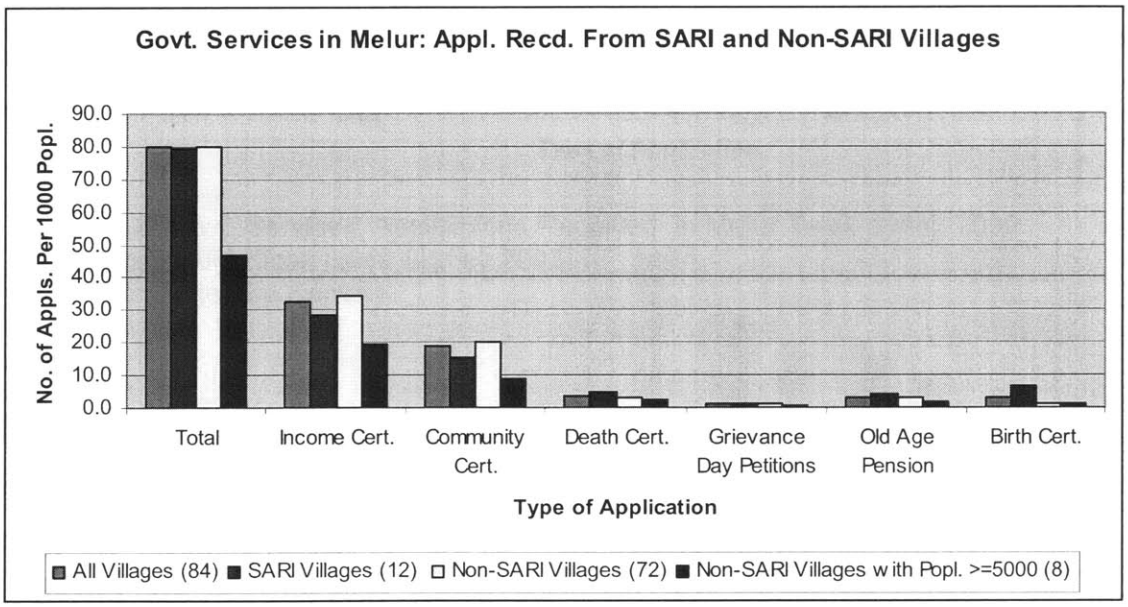

Fig. 6.1: Comparative Analysis of the Applications Received in Taluk Office During 2002
(Source: SARI Kiosk users Survey 2003)
(Author: Rajendra Kumar)

I present the above results in detail below. Fig. 6.2 shows the overall demand for various government services in the entire Melur Taluk. As can be seen, the top seven most demanded government services are income and community

certificates, patta (record of land ownership) transfer applications, death and nativity certificates, old age pensions, and birth certificates.

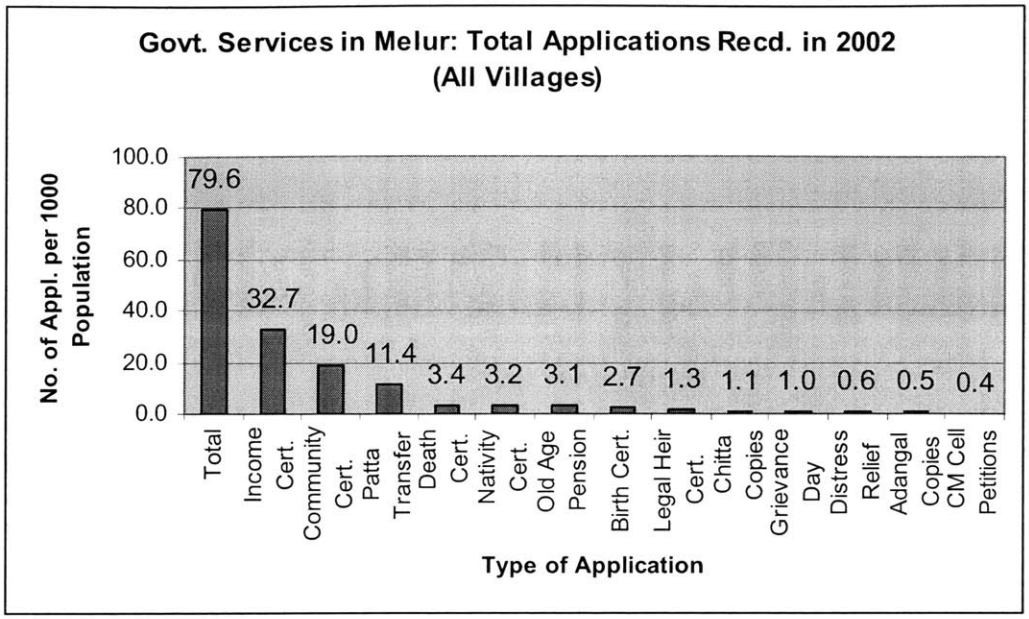

Fig. 6.2: Govt. Services: Applications Received in Melur Taluk during 2002
(Source: SARI Kiosk users Survey 2003)
(Author: Rajendra Kumar)

Fig. 6.3 shows the distribution of applications received from the 12 villages where SARI kiosks functioned regularly during 2002. The total number of applications remains almost the same when compared to that for all the villages, but the numbers are substantially higher for birth and death certificates, old age pensions, chitta copies, and grievance petitions. At the same time, some categories show a decline, such as income and community certificates, and patta transfer applications.

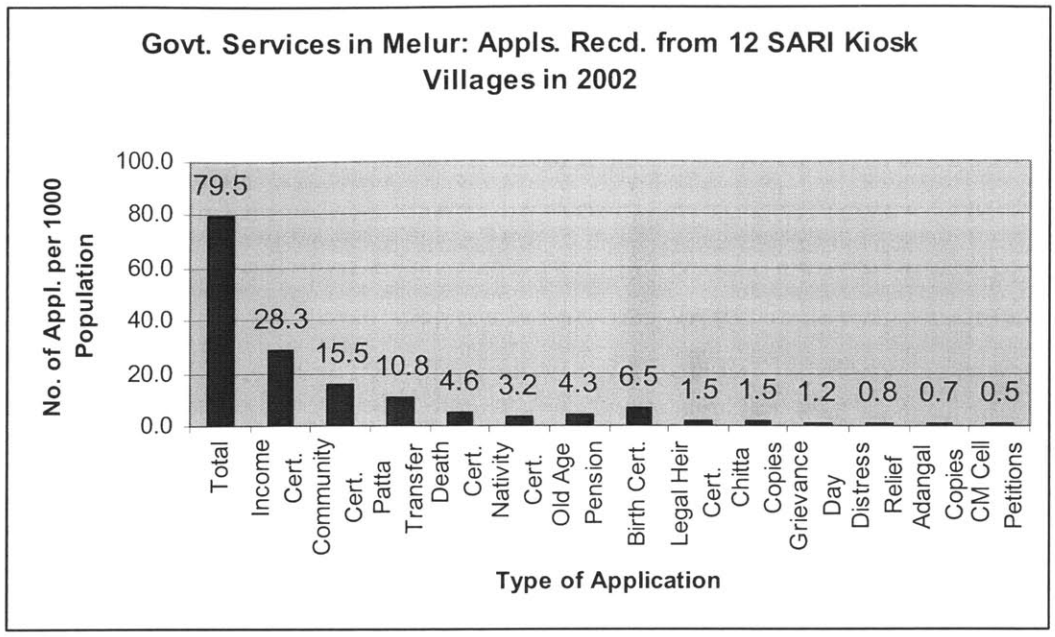

Fig. 6.3: Distribution of Applications Received from 12 SARI Villages
(Source: SARI Kiosk users Survey 2003)
(Author: Rajendra Kumar)

Fig. 6.4 presents the applications received from the 72 non-SARI villages. While the total number of applications is almost the same for both SARI and non-SARI villages, the numbers are substantially higher in SARI villages for birth and death certificates, old age pensions, chitta copies, and grievance day petitions.

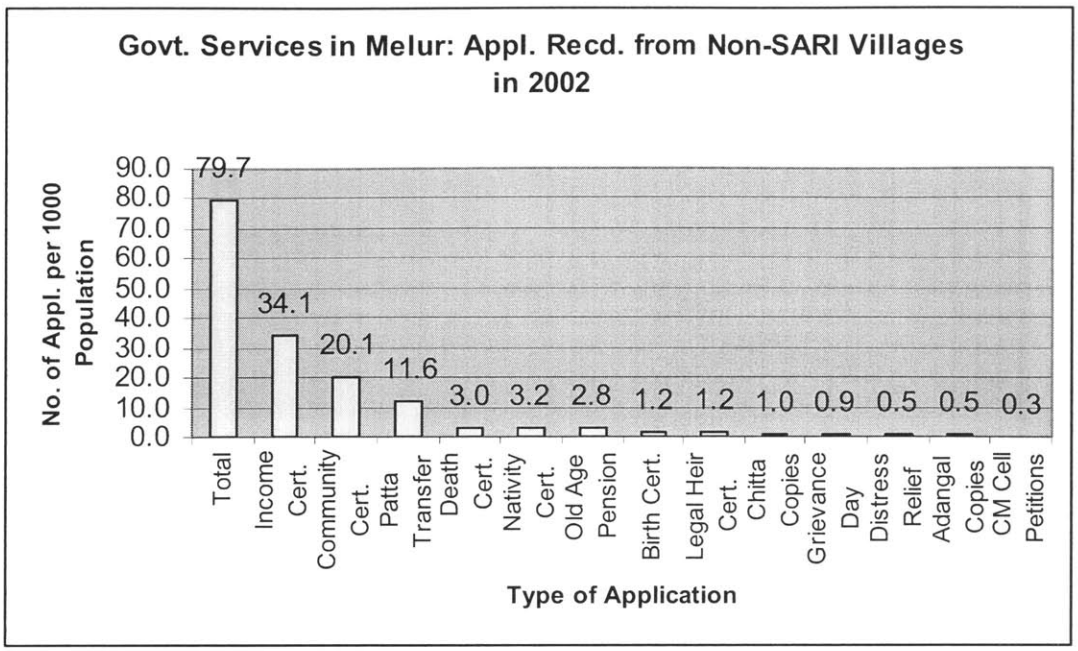

Fig. 6.4: Distribution of Applications Received from Non-SARI Villages
(Source: SARI Kiosk users Survey 2003)
(Author: Rajendra Kumar)

The kiosks show a significant impact on the above mentioned services even when we control for the population of the village. The average population of the 12 SARI villages is 5,033. Taking only those non-SARI villages with a population equal to or greater than 5,000, the increase in the applications for the SARI villages is even more pronounced (Fig. 6.5). In fact, the larger villages show a decline in the number of applications for almost all categories.

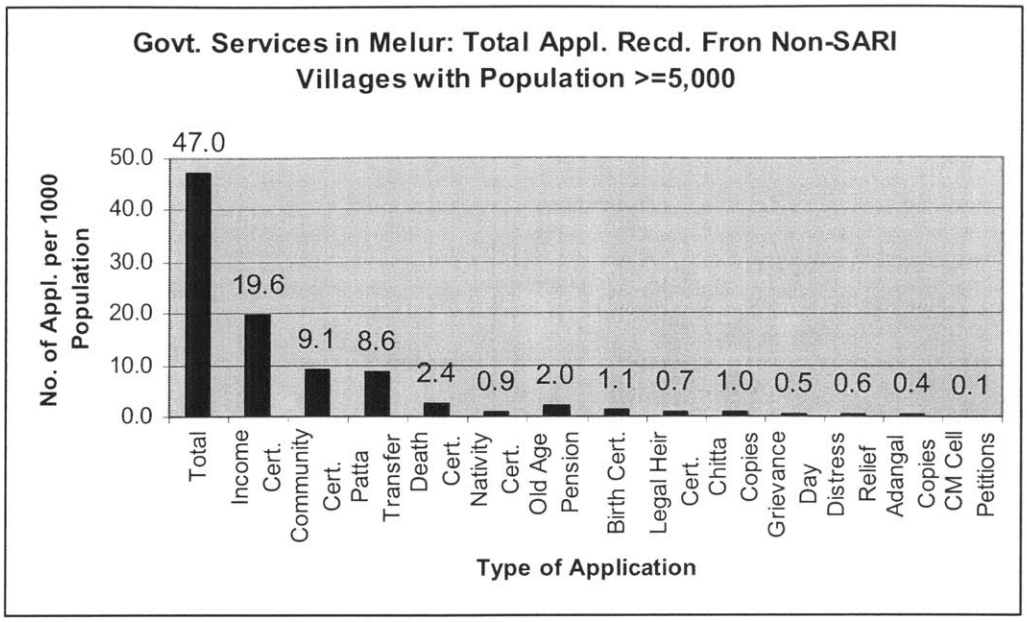

Fig. 6.5: Applications Received from Villages with Population >=5,000
(Source: SARI Kiosk users Survey 2003)
(Author: Rajendra Kumar)

The impact of the kiosks in facilitating these services is further evident from the fact that the Taluk office received a large proportion of the applications for each category through the kiosks in these villages. Fig. 6.6 shows these percentages.

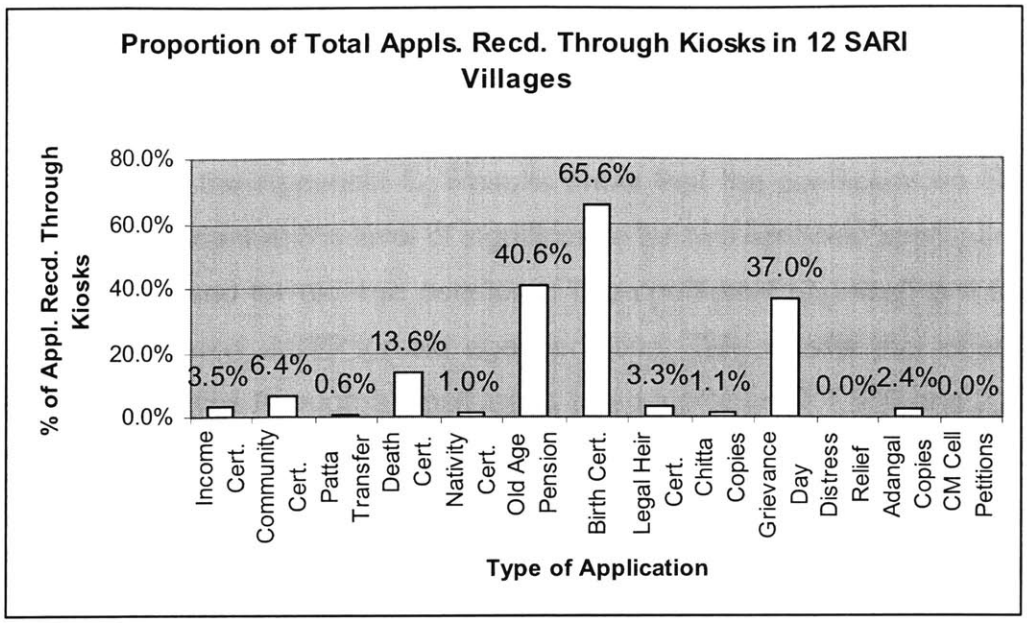

Fig. 6.6: Proportion of Total Applications Received through Kiosks
(Source: SARI Kiosk users Survey 2003)
(Author: Rajendra Kumar)

6.2 Statistical Analysis of the Impact of the Kiosks: Multiple Regression Model

A multivariate regression analysis of the above data on government services also reveals the positive impact of the kiosks on these services. I used the following multiple regression model for analyzing the impact:

No. of Applications Received Per 1000 Population in the village = β_0 + β_1*Population of the village + β_2*Literacy Rate in the Village + β_3*% of SC/ST Population in the Village + β_4*SARI + ε

In the above equation, SARI is a dummy variable (with a value of 0 or 1) indicating whether the village has a kiosk or not. The other explanatory variables are included to control for other factors that could explain the variation in the number of applications received. I ran the above model for the following

categories of applications received in the Taluk office: total applications including all categories, birth certificates, death certificates, income certificates, community certificates, grievance day petitions, and old age pensions. The detailed results are presented in the Appendix C. Results show that the coefficient on SARI is statistically significant at 5% level of significance for two services: applications for birth certificates and for old age pensions. The coefficient (β_4) itself is 4.950 for birth certificates and 2.925 for old age pensions. This means that offering e-government services through a kiosk leads to an increase of 4.950 and 2.925 in the average number of applications (per 1000 population) for birth certificates and old age pensions respectively, when compared to that when the village has no kiosk, keeping other factors constant. The R^2 for the two regressions are 0.195 and 0.103 respectively.

In the above model, the other explanatory variables with statistically significant coefficients (at 5% level of significance) are: population of the village and its literacy rate. The coefficients for these two variables (β_1 and β_2 respectively) themselves are negative for the following categories: total applications, income certificates, and community certificates. For grievance day petitions, the coefficient on population is positive and significant. For other categories of applications, the coefficients are not significant. Negative coefficients imply that an increase in the population or literacy rate in the village leads to a decrease in the average number of total applications, applications for income certificates, and community certificates, keeping other factors constant.

Why have the kiosks led to an increase in the number of applications for these two services? To answer this question, I looked at qualitative evidence. My interviews with some of the beneficiaries of these services indicate that this has happened mainly due to the significant savings in time, cost, and effort required in obtaining these services through the kiosks when compared to those in obtaining the same services before. Whereas earlier one had to personally visit

the Taluk office at least twice to obtain a birth certificate (once for submitting the application and then the second time to collect it), now the same can be done easily through the village kiosk without making any visit[2]. This saves considerable time and money for the applicants. The increase in applications for old age pensions also appears to be due to the same reasons. The old people in the village now find it easier to apply through the kiosk itself instead of their having to visit the Taluk office personally. In this sense, the kiosks have also led to a positive social impact, as they may not have availed of the pension in the absence of the kiosk.

6.3 Economic Impacts

There is evidence to suggest that the kiosks have produced significant positive economic impacts. I examined these in two broad categories: economic benefits to the community through services at a comparatively lower cost, and creation of new economic and employment opportunities.

Economic Benefits Through Services at a Lower Cost

Interviews with the users reveal that the kiosks have succeeded in providing several services at a cost much lower than that prevailing earlier for same or similar services. The most often cited example is that of basic computer education which can be availed of at a very low price of only Rs. 50-100 per month compared to Rs. 300-500 in the computer institutes at Melur. The other example is that of communication services. Whereas an international telephone call may cost upto Rs. 24 per minute[3], voice chat at the kiosks costs only Rs. 25 per hour. As stated before, e-government services save considerable money for the users. Whereas earlier one had to spend anywhere between Rs.100-300 for

2 In some cases, the applicants are required to visit the Taluk office personally for collecting the certificates. In other kiosks, the operators collect the certificates and hand over to the applicants.

3 Prevailing rate for making calls through the state owned Bharat Snachar Nigam Limited (BSNL) in July 2003.

obtaining a birth certificate, the same can be obtained now by spending only Rs. 30-40 at the kiosk. Table 6.1 provides the list of services which are now available to the users at a lower cost.

Table 6.1 Services at a Comparatively Lower Costs Through the Kiosks

Service	Rate Charged at the Kiosk (Rs.)	Rate Charged Earlier at Other Places (Rs.)
Basic Computer Education	50-100 (per month)	300-500 (per month)
Voice Chat	25 (per hour)	24 (per minute)
E-mail	10 (per email)	15 (through post office)
E-Government Services	30-40 (including delivery)	100-300

Source: SARI Kiosk Users Survey, 2003 and Data from Kiosk Operators
Author: Rajendra Kumar

Creation of New Economic Opportunities

The kiosks have also created new economic opportunities in their communities, though this impact does not seem to be substantial at present. The kiosk, by itself, has created direct self-employment opportunity for at least one educated local person. In addition, they have facilitated easy access to vast amounts of information available online to the village community, thereby creating new economic opportunities indirectly. My interactions with the kiosk operators and users reveal that this has happened mainly in two ways: making online information about higher educational opportunities available to the local youth, and through access to online information about jobs available in other places. The kiosks have also helped in upgrading the skills of the local youth by providing them with basic computer education. This has helped in opening up new employment opportunities to them.

It is clear that such opportunities to these communities would not have been available in the absence of the kiosks. Though it is difficult to statistically quantify

these impacts due to lack of adequate data, there is enough qualitative and anecdotal evidence to support this.

6.4 Conclusion

In conclusion, it can be stated that kiosks have produced significant governance impacts in their communities. They have led to increased demand for at least two government services and have also led to significant improvements in their delivery in terms of savings in time, effort, and costs. They have also created economic impacts through comparatively lower cost services and through creation of new economic and employment opportunities. The kiosks are providing several services at a lower cost, such as basic computer education, e-mail, voice chat, and e-government services. They have also created new economic opportunities for their communities in two ways: by creating direct employment opportunities for at least one self-employed local entrepreneur, and by facilitating easy access to online information about educational and career opportunities for the local youth. The basic computer education provided by them has also helped in upgrading the skills of the local youth and in increasing the employment opportunities available to them.

7. DIFFUSION OF KIOSKS AS A TECHNOLOGICAL INNOVATION

How do we explain the observed socioeconomic impacts of the kiosks in a theoretical framework? How well have they diffused, and been adopted, in their communities? Does socio-cultural environment affect their diffusion and adoption? Answering these questions not only provides us with a conceptual framework to explain the observed consequences of the kiosks, it also helps us to prescribe and formulate policy recommendations for their planning and design. As kiosks represent a technological innovation within these communities, it is useful to consider these questions within the theoretical and conceptual framework of the theory of diffusion of innovations (Rogers, 2003). In the following sections, I draw heavily from both this theory and its application as a framework for telecenters proposed by Roman (2003).

Roman (2003) describes three most important aspects to be considered in applying the theory of diffusion of innovations to telecenters: the perceived attributes of the innovation: how the kiosks and their services are perceived by the community; the communication of innovation: how the innovation is communicated within the community; and the consequences of adoption: the socioeconomic impacts of the kiosks. In the following sections, I attempt to place the kiosks and their observed socioeconomic impacts within this framework.

7.1 Perceived Attributes of Innovations

Roman (2003) describes three most important perceived attributes of innovations in the context of telecenters: relative advantage which indicates the costs and benefits associated with the adoption of an innovation; compatibility which

indicates the perceived match of the innovation with the value system and social norms of the potential adopters; and complexity which is the perceived degree of difficulty of the innovations in its understanding and use.

Relative Advantage

In the context of the SARI kiosks, it is clear that relative advantage has been a key factor in the use of the kiosk services. The most reliable evidence of this is in the case of the e-government services, where savings in time, effort, and costs have led to significant increases in their demand. Comparatively lower costs with comparable quality and easy availability also help explain the very high usage of computer education at the kiosks.

Compatibility

The issue of compatibility is closely linked to the existing socio-cultural environment in these communities and may help explain the observed socioeconomic profile of the users. One major finding that it helps explain is the absence of women users from the kiosks. Though the technology itself may be considered to be gender-neutral, how it is perceived and used within the community is not divorced from the surrounding social norms. Women in these households often don't have the decision-making power and control over use of money, and the men don't consider the technology to be of any use to them, except maybe in availing health services. But the households do allow girl students to come to the kiosks for computer education, which is widely perceived to be useful to them. This indicates the importance of relevant content and services for attracting women users.

Compatibility is also linked to the issue of relevant content. There have been considerable efforts in assessment of needs and relevant applications (Aral *et al,*

2001). However, even if the broad areas where relevant content can be provided are known, far greater efforts are required in narrowing them down, and actually developing and delivering them to the communities. One example that repeatedly came up during this study is with regard to e-government services. The government and its associated agencies are the most ubiquitous service providers in rural areas, and any plan to diffuse the kiosks widely among the population should target at providing these services with a comparative advantage. This seems to be known to the kiosk operators, project officials, and also the government, but the initial enthusiasm in tacking this aspect appears to be waning of late. I discuss this issue in more detail in chapter eight.

Complexity

Complexity of the innovation is closely linked to its perception in the community that it is meant only for those who are *educated.* I found this to be true in many discussions with the users and would certainly be true among the non-users. The very image of a computer which they can use only with the help of an external operator is too complex for them. Great efforts are required to demystify the kiosks, an issue intimately linked to how the innovation is communicated within the community. I consider this issue next.

7.2 Communication of Innovation

Communication is the exchange of information through which new ideas are propagated from one individual to others (Rogers, 2003). It is the very essence of diffusion of innovations. The two most important ways through which ideas are communicated are: through mass media and through interpersonal communication. Theory suggests that mass media are best for creating awareness about innovations, whereas interpersonal communication is more important for the final decision to adopt (Roman, 2003). Research also suggests that diffusion is linked to existing social networks (Rogers and Kincaid, 1981) and

that the concept of homophily (Rogers, 2003) is very important in propagation of new ideas. This suggests that diffusion takes place more effectively when individuals are similar in their socioeconomic status, educational attainment, beliefs, etc.

How can the above framework be applied to the present study? Evidently, the kiosks have been used mainly by those who enjoy a comparatively higher socioeconomic status (with some exceptions) and are yet to reach the vast majority of the population. Apparently, good amount of effort has been put in creating awareness about the kiosk, both through mass media and through interpersonal communication by the kiosk operators. Then, why have they not succeeded in having a wider reach?

It is important to consider this question in the socio-cultural context of rural communities in India and how it affects diffusion. As explained earlier, there is residential segregation by community (caste) in the villages, often cutting across income levels. Individuals belonging to the same caste also enjoy a high degree of homophily in their socioeconomic status and social value systems. This is where the crucial role of the local leaders - kiosk operator or other influential opinion makers - in promoting adoption and use comes in. There is sufficient evidence to suggest that the kiosk operator plays a crucial role in promoting adoption and use of the kiosks. However, wider diffusion of the kiosks among communities having a comparatively lower socioeconomic status requires local champions from *within those communities*, not just the kiosk operator who seems to be able to influence mainly those from his or her own community. In this context, involving local self-help groups - comprised mainly of individuals with a similar socioeconomic status for the purpose of organizing an income generating activity - in promoting the kiosks seems to be a promising approach.

This study throws up two additional factors that are important in the diffusion of kiosks. As discussed earlier, due to historical reasons, Dalits still face psychological and social barriers in accessing any facility that is located in areas

inhabited by the higher socioeconomic status communities. This aspect points to the importance of location of the kiosks in its adoption and use by the communities with comparatively lower socioeconomic status. This is evident in the success of two kiosks (Keelaiyur and Kidaripatti) in attracting the Dalit users.

Another important factor in the diffusion of the kiosks is affordability. Discussions with users reveal that this is an important aspect in their use of the kiosks, even when they are aware of the services and its benefits. The usage of the kiosks so far seems to be driven by its relative advantage: savings in time, costs, and efforts when compared to those in traditional modes of availing the same services. However, affordability of the kiosk services in absolute terms is perceived to be an important factor by the users and is likely to be crucial in the extent of their ultimate diffusion.

7.3 Consequences of Adoption

It is difficult to theorize the consequences of adoption of innovations mainly because it is prone to be led by value judgments (Roman, 2003). Rogers (2003) himself points out that diffusion is likely to widen the existing socioeconomic inequalities within a social system. Empirical research on telecenters supports this finding (Blattman et al, 2002, Holmes, 2001; Hudson, 2002).

How do we place the findings of this study on socioeconomic impacts in a theoretical framework? The finding that the kiosks are being mainly used by those enjoying a higher socioeconomic status is in line with the knowledge gap hypothesis (Trichenor et al, 1970). However, this should be interpreted with caution due to the problematic nature of diffusion of the kiosks in the context of the complex socioeconomic and cultural realities in rural India. In other words, it is not a simple cause and effect relationship with the 'gap' in knowledge and adoption, but it is intricately woven with the historical social and cultural relationships among communities in rural areas, e.g., social and psychological

barriers in access to facilities, affordability, and compatibility with existing socio-cultural value systems (for example, in diffusion among women).

7.4 Conclusion

It is evident that the kiosks have a long way to go before they are widely adopted and used by the community. In their present structure, they may also be exacerbating the existing socioeconomic inequities. However, this study throws up some important findings as to how the socioeconomic and cultural context can affect their adoption and use. Most notably, it underscores the importance of location, relevant content, and local champions in adoption and use of the innovation, and shows that affordability can adversely affect the ultimate extent of diffusion. The next step is to incorporate these aspects into the planning and design of the kiosks.

8. SUSTAINABILITY

In any intervention of this type, sustainability issues are very important as the initial novelty of the technology tends to wear off after some time and the user base stops growing. Sustainability of the kiosks is predicated on their financial viability, ability to attract and retain new users, ability to offer new services at affordable rates and with a relative advantage over the traditional services, and ability to develop and maintain new institutional partnerships for delivery of services. This implies that the kiosks have to continuously change and adapt themselves to meet the needs of the community in an efficient and affordable way. In a rural and relatively poor community, issues of affordability and the ability to offer new services are especially relevant. In this chapter, I analyze these aspects of the project. I first present an analysis of the usage of the present kiosk services, then discuss the affordability and the potential for providing new services, and finally discuss the importance of developing and maintaining institutional partnerships for delivery of services.

8.1 Usage of Present Kiosk Services

Before analyzing the affordability of the kiosk services, it is relevant to understand how the kiosk services are presently being used by the community. As stated earlier, most of the kiosk users are young, male, and are school or college students. Most of the present usage at kiosk comes from this group who visit the kiosk daily for one month (or more) to get computer education. The pattern of the usage of services at the kiosk clearly reveals this aspect (Table 8.1). As can be seen from the table, computer training is the most frequently used service, followed by computer games, email, browsing, and voice mail/voice chat.

Table 8.1: Usage of Kiosk Services (% of Users)

Service	Ulagapit-champatti	Thiruv-adavur	Keelaiyur	Thaniya-mangalam	Kidaripatti
Comp. Trg.	15%	57%	50%	67%	65%
E-mail	12%	14%	25%	19%	15%
Voice Mail/Chat	12%	7%	15%	19%	5%
Birth/Death Cert.	9%	14%	5%	0%	0%
Income Cert.	0%	0%	10%	0%	5%
Community Cert.	6%	4%	5%	0%	5%
Browsing	3%	7%	40%	11%	10%
Games	15%	25%	35%	44%	45%
Agriculture	6%	0%	5%	0%	0%
Petitions to Govt.	18%	0%	5%	4%	0%
Astrology	0%	14%	5%	0%	0%
Typing	21%	11%	10%	0%	15%
Job Search	0%	0%	0%	7%	0%
See Result	6%	4%	0%	26%	5%
Health	15%	4%	0%	4%	0%
Veterinary	9%	0%	0%	0%	0%
Cartoon Viewing	15%	0%	0%	0%	0%
Other	12%	7%	0%	0%	5%

Source: SARI Kiosk Users Survey 2003
Author: Rajendra Kumar

As computer training is the most used service, we may expect these users to be visiting the kiosk frequently. This is revealed clearly in Fig. 8.1, which shows that most of the users have visited the kiosk more than ten times except in one village (Ulagapitchampatti). This exception is due to the village having the lowest usage for computer training (Table 8.1).

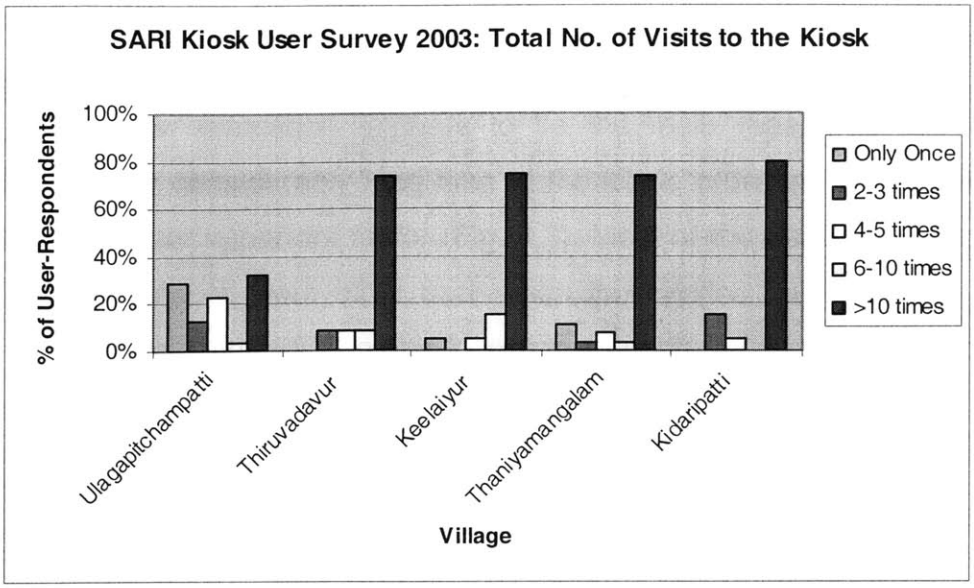

Fig. 8.1: Frequency of Visits to the Kiosk by Users
(Source: SARI Kiosk Users Survey 2003)
(Author: Rajendra Kumar)

Most of the present users spend over 30 min. at the kiosk during one visit (Fig. 8.2). This again is mainly due to the students spending over an hour at the kiosk during each visit for computer training.

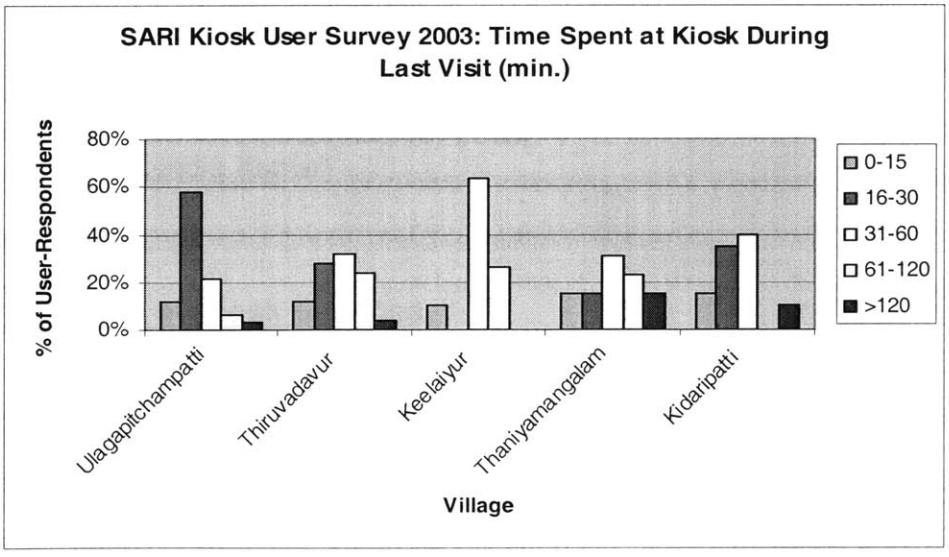

Fig. 8.2: Time Spent by Users at the Kiosk
(Source: SARI Kiosk Users Survey 2003)
(Author: Rajendra Kumar)

Though computer education appears to be the main reason for kiosk users spending such a considerably long time at the kiosk, crowding at the kiosk also appears to another important factor (Fig. 8.3). Most of the users report that they found at least one or more other user when they visited the kiosk last time. It points to the potential inability of the kiosks in catering to higher number of users in future.

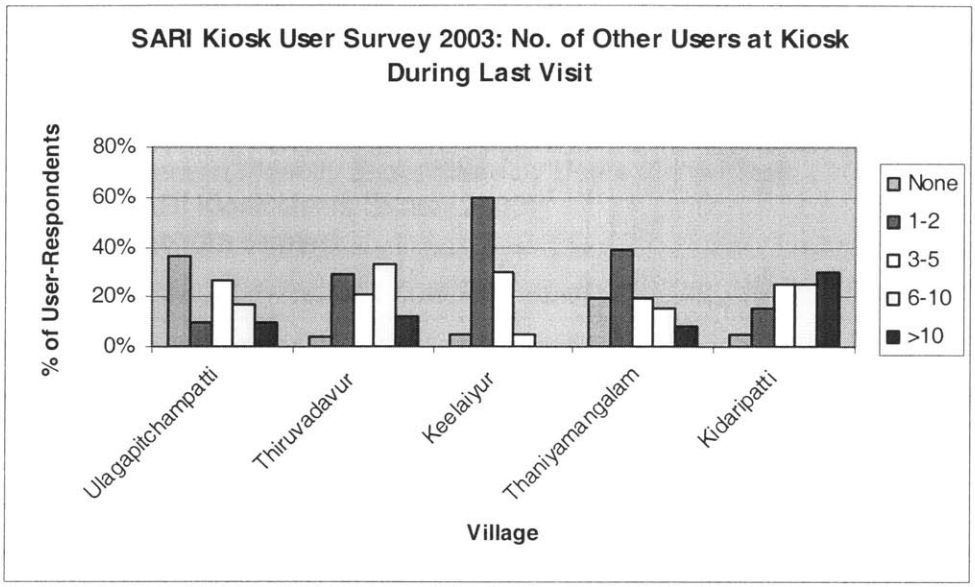

Fig. 8.3: No. of Other Users at the Kiosk During Last Visit
(Source: SARI Kiosk Users Survey 2003)
(Author: Rajendra Kumar)

8.2 Affordability of Kiosk Services

Before discussing affordability of the kiosk services, it is important to analyze the present monthly expenditures by users at the kiosk and how they relate to their monthly households incomes. Survey results show that most of the users spend between Rs. 21-50 at the kiosk every month, and in two villages (Keelaiyur and Thaniyamangalam), this amount is in the range of Rs. 51-100 (Fig. 8.4).

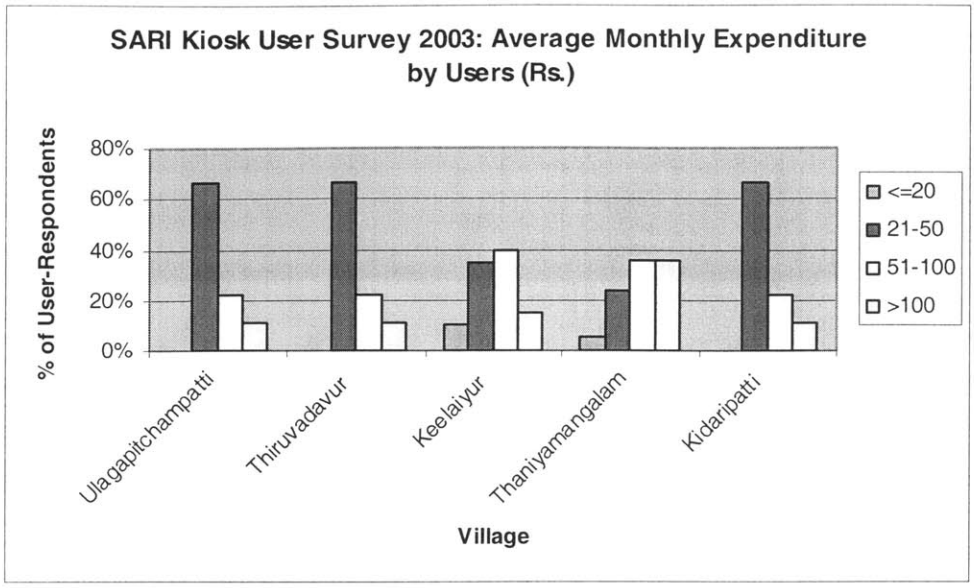

Fig. 8.4: Average Monthly Expenditure by Users at the Kiosk
(Source: SARI Kiosk Users Survey 2003)
(Author: Rajendra Kumar)

Most of the users also state that they can easily afford the kiosk services (Fig. 8.5). However, this result needs to be interpreted with caution. This does not indicate affordability of the services among the general village population, but only among the kiosk users, who are likely to indicate higher affordability anyway as they are the ones to visit the kiosks.

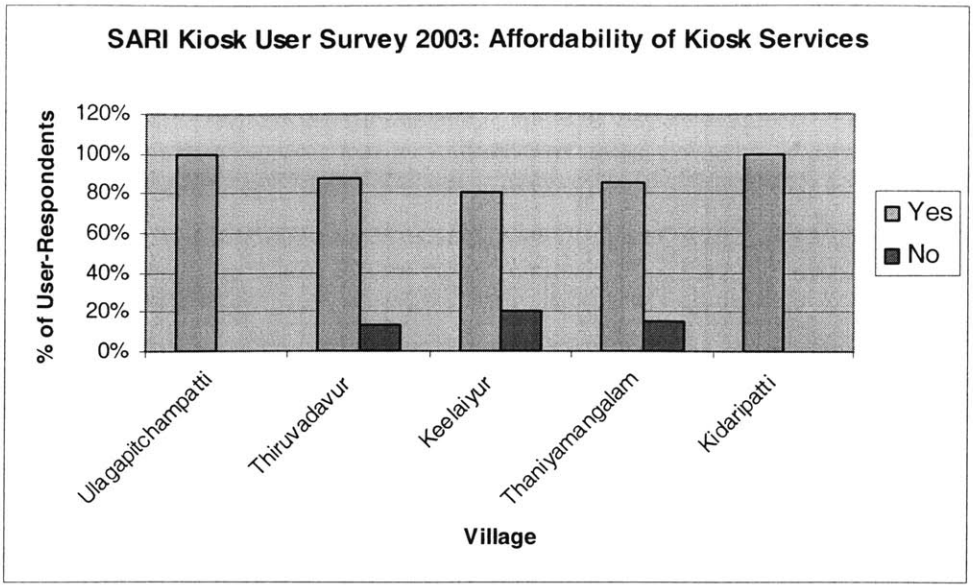

Fig. 8.5: Affordability of Kiosk Services
(Source: SARI Kiosk Users Survey 2003)
(Author: Rajendra Kumar)

A more meaningful idea of affordability can be obtained by relating the kiosk expenditures to the monthly household incomes of the users. As discussed earlier, the average monthly incomes for a middle income user household in these villages are in the range of Rs. 1000-2500. Thus, as a percentage of their monthly incomes, the monthly expenditures at the kiosk are in the range of 2-5%, which seem to be on the higher side from the point of view of affordability.

That affordability of the kiosk services is an issue is further indicated by the willingness to pay for them. Fig. 8.6 indicates the willingness to pay for one hour of internet use at the kiosk. Majority of the users state that they would be willing to pay only less than Rs. 20 with a significant percentage saying below Rs. 10. This is substantially lower than Rs. 25 being charged at present.

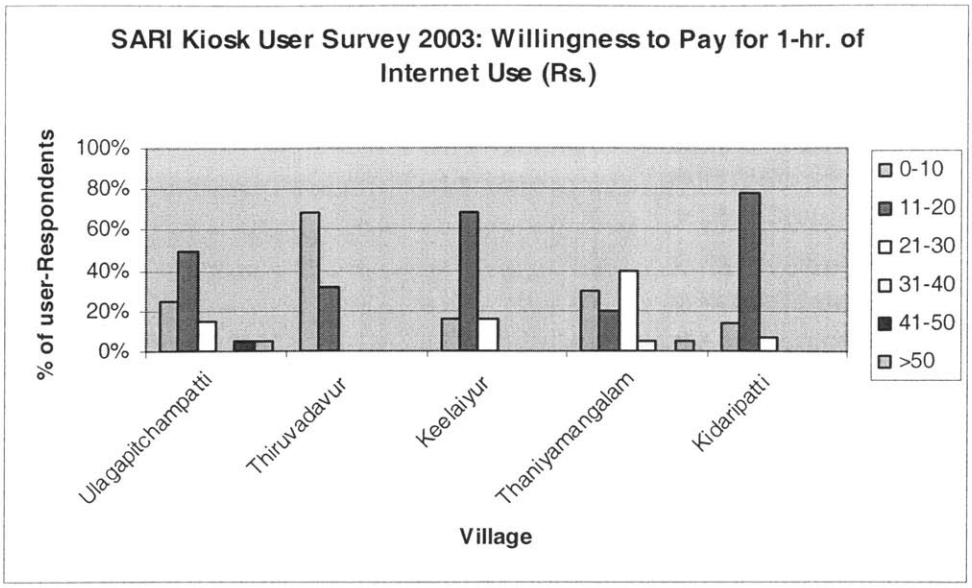

Fig. 8.6: Willingness to Pay for 1-hr. of internet use
(Source: SARI Kiosk users Survey 2003)
(Author: Rajendra Kumar)

8.3 Potential For Providing New Services

The survey indicates that there is a huge potential for providing new services through the kiosks. This has the potential of not only attracting more users and increasing the usage of the kiosks, but also to make them financially more viable and sustainable. The potential new services most often cited by the users include online payments for electricity bills and other government fees, repayment of bank loans, issue of income and community certificates (only applications are being accepted at present, the applicant has to go and collect the certificate in person from the Taluk office), applying for government jobs, and registration of land transactions. The survey results are presented in the Fig. 8.7.

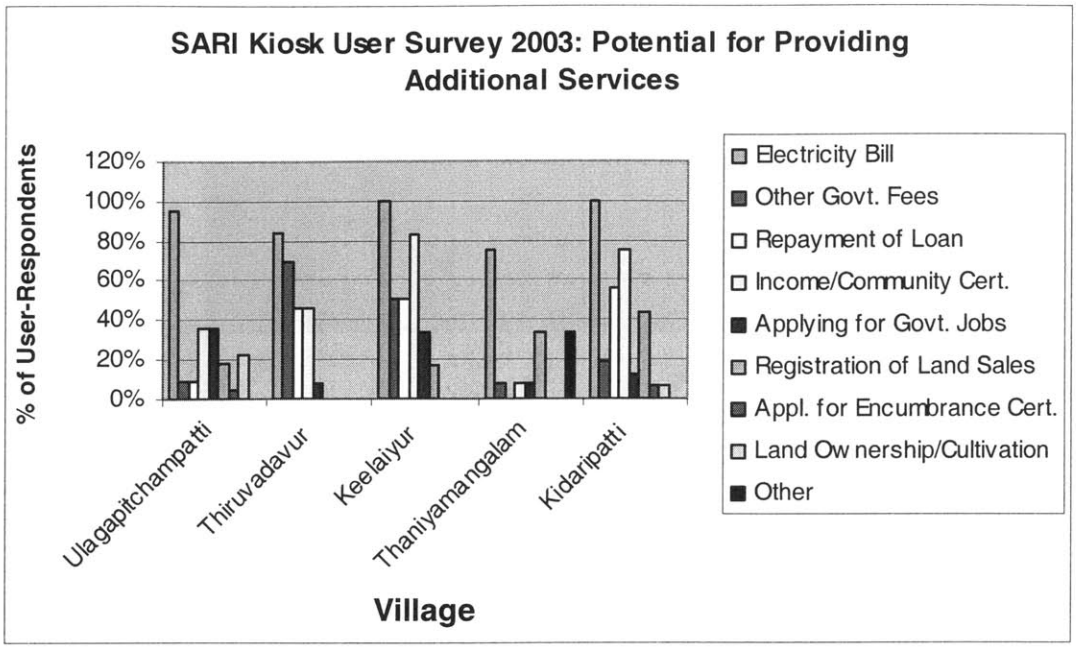

Fig. 8.7: Potential For Provision of Additional Services
(Source: SARI Kiosk users Survey 2003)
(Author: Rajendra Kumar)

In addition to providing new services, there is also good potential for opening more kiosks in other hamlets of the present kiosk villages (Fig. 8.8). Most of the users (except in one village, Ulagapitchampatti) feel that there is need for opening more kiosks. This is likely to facilitate easy access to the kiosks by the people living in those hamlets, who now have to travel a long distance to come to the kiosks. However, the commercial viability of these new kiosks needs to be assessed carefully, as their potential catchment area for users is likely to shrink.

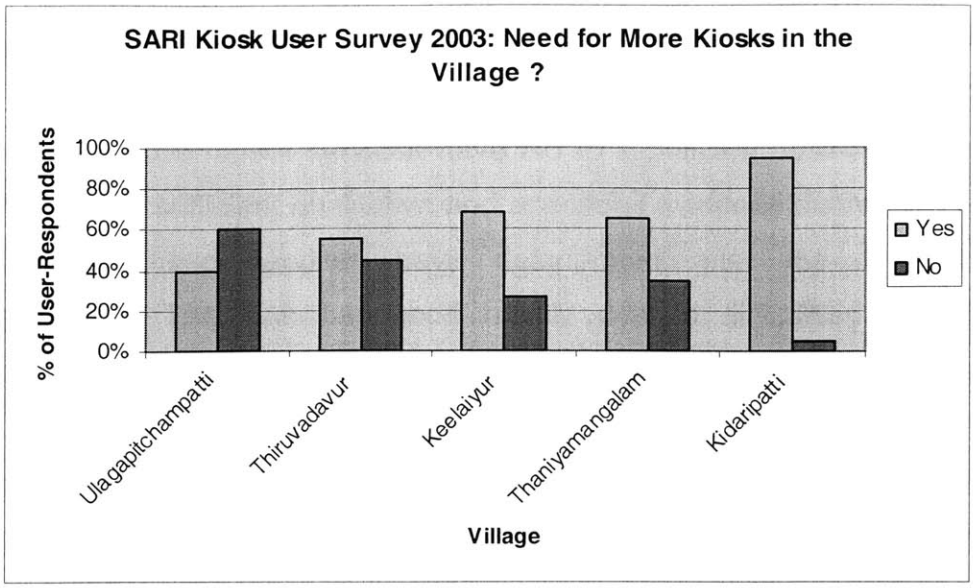

Fig. 8.8: Potential for Opening More Kiosks
(Source: SARI Kiosk users Survey 2003)
(Author: Rajendra Kumar)

8.4 Developing and Maintaining New Institutional Partnerships

Developing and maintaining new institutional partnerships is of critical importance in delivering new services effectively. For example, to be able to offer additional government services such as for registration of land transactions, the kiosks need to develop partnership with the state Registration Department for accepting and processing applications sent by email through the kiosks. The same holds true for other services. As the government and its associated agencies are the largest service providers in the rural communities, it is of crucial importance that the project as a whole and the kiosks individually develop and maintain new partnerships with them.

However, the experience of the kiosks in the delivery of e-government services suggests that the process has experienced several difficulties. I discuss the possible reasons for this in the next section.

8.5 Recent Deterioration in E-Government Services

Though the e-government services have led to significant positive governance impacts, I found sufficient qualitative and anecdotal evidence during my study to suggest that these services have deteriorated after the first year of implementation. This has happened mainly due to difficulties in obtaining immediate response from the Taluk office to the applications sent from the kiosks. In some cases, due to urgency, the applicants themselves prefer to personally visit the Taluk office to obtain the certificates on the same day. However, in most cases, delay on the part of the Taluk office in dealing with these applications seems to be the main reason. My interactions with the Taluk office staff and the kiosk operators reveal that this has happened mainly due to lack of adequately trained personnel at the Taluk office, and due to frequent shifting of the staff providing these services. The transfer of the Tahsildar – administrative head of the Taluk office – who was instrumental in motivating the staff to provide e-government services, also seems to be a major reason for the deterioration. In the beginning, all the officials dealing with e-government services were provided training by the SARI project in using computers to handle the applications received from the kiosk. My interactions with the SARI project officials reveal that this training has virtually stopped now. The reasons cited by them for this are twofold: the need to train a large number of staff due to frequent transfers, and lack of commitment on the part of the staff to implement this new mode of service delivery. These developments are likely to affect the delivery of these services in future and may affect the sustainability of the project itself, unless immediate remedial steps are taken to ensure more coordination between the Taluk office and the project.

Shift in Existing Power Relationships Due to the Kiosks

A deeper analysis of the deterioration in e-government services reveals another important reason for this phenomenon: perceived shift in the existing power relationships in the delivery of services due to the entry of the kiosks. This has deep implications for the sustainability of the kiosks and is also relevant in understanding how the partnerships with other agencies could get affected.

Qualitative evidence suggests that the main opposition to the delivery of e-government services through the kiosks has come from some Taluk and village level officials, who perceive a threat to their role, authority, and influence in the community as they are no longer the traditional contact person for the villager for these services. Instead, the kiosk operator assumes this new role of being a facilitator for communicating with the Taluk office. The diminished opportunities for corruption associated with control over how, when, and to whom the services are provided also seems to be a major reason for their opposition.

How the kiosks can change these power relations in the context of e-government services is explained in the Fig. 8.9. As can be seen, the e-government services try to reduce the intermediate channels of communication in the government hierarchy, thus reducing delays and chances of rent-seeking. Maintaining this partnership for continued efficient delivery of e-government services is a challenging task for the project. Commitment and support from the government is also essential for the sustainability of these services.

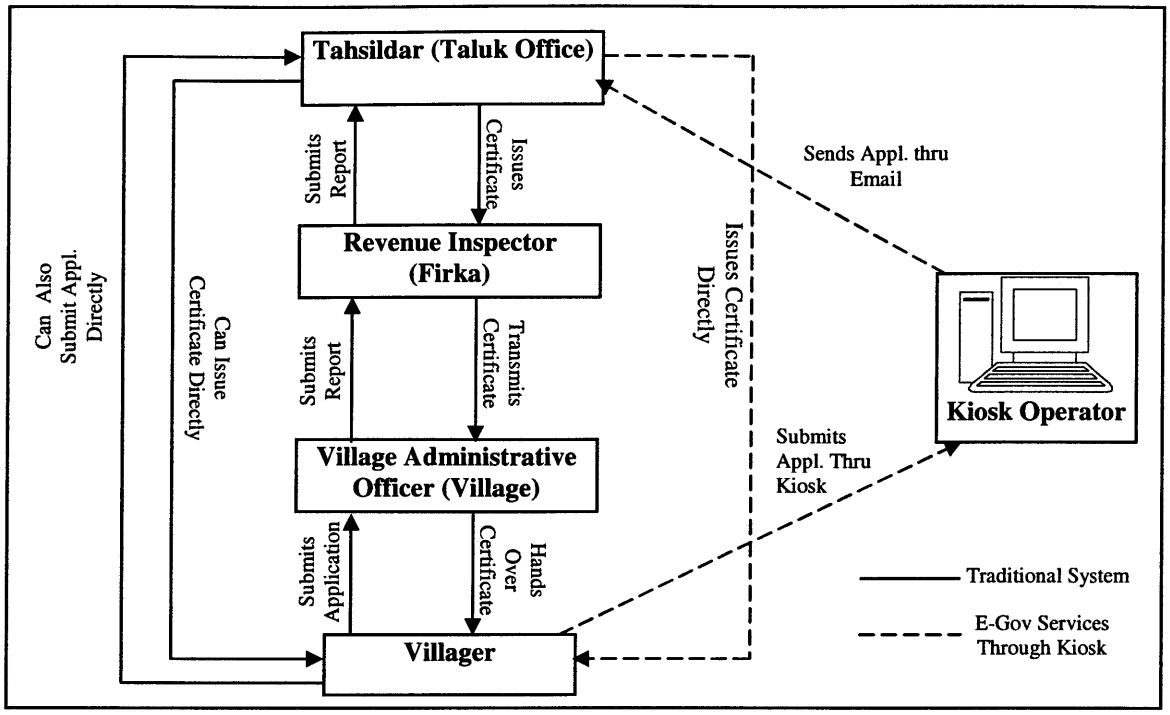

Fig. 8.9: Shift in Power Relationships in Government Hierarchy due to the E-Government Services

8.6 Financial Sustainability of the Kiosks

Making the kiosks financially sustainable is a major challenge for the project. As explained earlier, only around 10 kiosks are financially viable at present. These kiosks have become financially successful due to a multitude of factors: initial attraction of a new technology, enterprising operators who made extensive efforts to reach out to their communities, and their ability to offer institutional services efficiently and at a lower cost. Financial sustainability of the remaining kiosks is contingent upon their ability to increase the user base by attracting and retaining new users, provide new and affordable services, and develop and maintain new institutional partnerships for delivery of these services.

9. CONCLUSIONS AND RECOMMENDATIONS

Even during a relatively short span of approximately 18 months, the kiosks have led to significant social, governance, and economic impacts in their communities. They have established a visible presence in their communities, led to increased demand for, and improved delivery of, two government services, and have provided new economic opportunities to the local youth. However, evidence suggests that they may be leading to exacerbation of the existing socioeconomic inequalities within their communities. This study points to several possible interventions for making them more effective, especially in reaching out to the socially and economically disadvantaged communities. In this chapter, I present the major conclusions of this study, and then present some recommendations aimed at making the kiosks more effective and sustainable in serving their communities.

9.1 Conclusions

Social Impacts: Available evidence suggests that the kiosks are yet to reach the vast majority of their population. The kiosk users also have a significantly different social and economic profile when compared to that of their village communities: they are economically better-off and enjoy a higher social status. This suggests that the kiosks may be contributing to further exacerbation of the so-called 'digital divide'. However, this needs to be seen in its appropriate context. These communities had no access to these technologies earlier. In this sense, the kiosks help narrow the *existing* digital divide. However, they may be exacerbating the digital divide *within* these communities. The challenge for the project and the kiosks is to reach the socially and economically disadvantaged sections within these communities.

Governance and Economic Impacts: The kiosks have already produced significant governance impacts in the form of increased demand and improved delivery of two government services. They have also led to positive economic impacts in their communities through lowering the cost of some services and facilitating easy access to online information about educational and employment opportunities to the local youth. They have also provided direct self-employment opportunity to at least one local youth (the kiosk operator). Through low cost computer education, they have led to enhancement of skills of the local youth which has opened up new educational and employment opportunities for them.

Diffusion of Kiosks: Placing the kiosks within the framework of the theory of diffusion of innovations throws up several interesting findings with important implications for the planning and design of the kiosks. Most notably, it underscores the importance of relevant content and local champions in the adoption and use of the innovation, and shows that location and affordability can adversely affect their ultimate extent of diffusion.

Sustainability: Though some of the kiosks have been successful in attracting higher number of users, their sustainability in future depends upon their ability to widen their user base and to continuously improve their present services and provide new ones at affordable costs. Their ability to develop and maintain new institutional partnerships for delivering new services is also a crucial factor in their sustainability. This also impinges upon their financial sustainability, as delivering services with a relative advantage to the users is the key to their survival. The study indicates that there is good potential to provide new services, and to tailor some of the existing ones to make them more affordable to the poor sections of the village population.

One recent development which is likely to affect their sustainability adversely is the deterioration in e-government services. This has the potential to wipe out the positive governance impacts created, if corrective measures are not taken

immediately. This can also become a significant obstacle in diffusion of the kiosks among the socially and economically disadvantaged communities, as these services have the potential to attract them to the kiosks due to their relative advantage over the present modes of delivery.

9.2 Recommendations

Based on the study conducted, I make two sets of recommendations: those which could be implemented at the kiosk level, and those which are suitable at the project level.

Kiosk Level Recommendations

Reach Out to the Socially and Economically Disadvantaged Communities: At the kiosk level, the most immediate requirement is to make concerted efforts to reach out to the socially and economically disadvantaged communities. Though intensive canvassing among these households is the primary way to reach them, the present method of canvassing by adopting a uniform approach for everyone needs to be changed, as these communities may not have any use for many of the services currently being advertised. For example, services like e-mail or web browsing may not attract them at all. Qualitative and anecdotal evidence suggests that they are often interested in availing government services, such as obtaining a loan or a benefit under a government sponsored scheme, and obtaining certificates for birth, income, community, land registration, etc. They may also be more interested in agricultural and veterinary services, health services, and computer education for their children. As the kiosks are already providing many of these services, an intensive campaign to create awareness about these services among the socially and economically disadvantaged households can be very helpful. Also, as pointed out earlier, the operators need to identify local champions within these communities to promote wider diffusion of the kiosks.

Improve Service Delivery: The kiosks also need to improve their services to widen their user base. As explained earlier, I found sufficient anecdotal evidence to suggest that e-government services have deteriorated of late. While this may have partly to do with lack of coordination between the SARI project and the district administration, there is enough scope to improve the other services currently being provided. Even for the same service, the modes of delivery adopted by different kiosks vary considerably. For example, for e-government services, some operators go to the extent of personally visiting the Taluk office and obtaining the certificates for the applicant, whereas in other kiosks, the applicants have to personally visit the Taluk office later to get the same. Similarly, some of the kiosk operators personally follow up on the emails sent to the Tamil Nadu Agricultural and Veterinary University or the private eye hospital to get proper response. This indicates that with some additional efforts on the part of the kiosk operators, delivery of these services can be improved considerably. This would definitely help in attracting more users to the kiosks.

Make Services More Affordable: This can also help in attracting more users, especially from the Dalit and poor communities. Though it may be difficult for the kiosks to charge lower fees from the poor users for all services, it can definitely be done for some services, such as for computer education and for e-government services which have the greatest potential for attracting them. I found that the Dhan kiosks are already doing this, with encouraging results.

Project Level Recommendations

Strengthen Existing Institutional Partnerships with Other Agencies: At the project level, the partnerships with various agencies for delivery of services need to be strengthened to make them more effective. As explained earlier, the e-government services need to be improved immediately. This can be done by ensuring proper coordination with the Taluk and district administration. There is

also enough scope for improving the other services, such as agricultural, veterinary, and health services. At present, these are mainly limited to initial consultation and fixing an appointment for meeting the doctor (for health services). There are no online follow-up services available and also fees cannot be paid online. To widen these services, the present partnerships need to be developed and strengthened further.

Develop New Institutional Partnerships: As explained earlier, there is also good potential to provide new e-government services, such as for online payment of electricity bills and other government fees, registration of land transactions, obtaining copies of land ownership records, etc. Online payment of telephone bills can be another potential area, though at present ownership of telephone is not widespread in these villages. In order to provide these services, the project needs to develop new partnerships with the agencies providing these services.

There is also scope for widening some of the services currently being provided to make them more comprehensive, such as health services. These services can be expanded to cover general health check ups, maternity and child health services, and management of medical records online. Some kiosks are providing maternity health services through a private doctor in Madurai, but these are at present limited to online chats with the doctor.

Focus on Developing Relevant and Localized Content: This can go a long way in attracting more users to the kiosks. Though, the project has made considerable efforts to provide content in the local language, these are limited at present to a few sites. Some potential areas where local language content can be very helpful are: filling up of forms online for e-government services, applications for college admissions and jobs, information about educational and career opportunities, local news and events, information about agricultural and veterinary practices relevant to the local needs, etc.

BIBLIOGRAPHY

ICTs, Telecenters and Development, Diffusion of Innovations

1. Alberts, D.S., and D.S. Papp, eds. (1997). "The Information Age: An Anthology on Its Impact and Consequences". Available at: http://www.ndu.edu/inss/books/books%20-%201998/Information%20Age%20Anthology%20-%20Sept%2098/

2. Boyle, Grant (2002), "Putting Context Into ICTs in International Development: An Institutional Networking Project in Vietnam", *Journal of International Development,* 14, 1, pp. 101-112.

3. Chataway, J. and Wield, D. (2000), "Industrialization, innovation, and development: What does knowledge management change?" *Journal of International Development,* 12, 6, pp. 803-824.

4. Census of India (1991, 2001). Online at: http://www.censusindia.net

5. Colle, Royal D. and Yonggong, Liu (2002), "ICT Capacity-building for Development and Poverty Alleviation, Enhancing the Role of Agricultural Universities in China", Third Asian Conference for Information Technology in Agriculture, Beijing, October 26-28, 2002. Online at: http://ip.cals.cornell.edu/commdev/documents/ictpaper-china.doc

6. Colle, R. D. and Roman, R. (2001), "Challenges in the Telecenter Movement" in R. D. Colle and R. Roman (eds*), Telecenters and ICT for Development: Critical Perspectives and Visions for the Future,* special theme issue of *The Journal of Development Communication*, Vol. 12/2 (December 2001). Online at: http://ip.cals.cornell.edu/commdev/documents/ictpaper-texas.doc

7. Dagron, Alfonso Gumucio (2001), "Prometheus riding a Cadillac? Telecenters as the promised flame of knowledge", Journal of Development Communication, Vol 12, no. 2. Online at: http://ip.cals.cornell.edu/commdev/documents/jdc-dagron.doc

8. Digital Opportunity Initiative (2001), "Creating a Development Dynamic", Final Report. Online at: http://www.opt-init.org/framework/DOI-Final-Report.pdf

9. Digital Opportunity Task Force (2001), "Digital Opportunities for All: Meeting the Challenge", Report of the Digital Opportunity Task Force, including a proposal for a Genoa Plan of Action, Washington, May 11, 2001. Online at: http://www.dotforce.org/reports/DOT_Force_Report_V_5.0h.pdf

10. Electronic Journal of Information Systems in Developing Countries (EJISDC) (2001), *Special Edition on Telecenters*, Vol. 4, 2001. Online at: http://www.is.cityu.edu.hk/research/ejisdc/vol4.htm

11. Flor, Alexander G. (2001), "ICT and Poverty: The Indisputable Link", Third Asia Development Forum on "Regional Economic Cooperation in Asia and the Pacific" organized by the Asian Development Bank, June 2001. Online at: http://www.worldbank.org/html/extdr/offrep/eap/eapprem/infoalexan.pdf

12. Gomez, R., P. Hunt, and E. Lamoureaux. (1999). "Telecentre Evaluation and Research: A Global Perspective", *Telecentre Evaluation: A Global Perspective (Report of an International Meeting on Telecentre Evaluation).* Gómez and Hunt eds. Far Hills Inn, Quebec, Canada, September 28-30, 1999. Online at: http://www.idrc.ca:8080/telecentre/evaluation/nn/06_Tel.html

13. Harris, R. "Evaluating Telecentres within National Policies for ICTs in Developing Countries", *Telecentre Evaluation: A Global Perspective (Report of an International Meeting on Telecentre Evaluation).* Gómez and Hunt (eds), Far Hills Inn, Quebec, Canada, September 28-30, 1999. Online at: http://www.idrc.ca/telecentre/evaluation/AR/18_Eva.pdf

14. Hudson, H (1999), "Designing Research for Telecentre Evaluation." *Telecentre Evaluation: A Global Perspective (Report of an International Meeting on Telecentre Evaluation).* Gómez and Hunt eds. Far Hills Inn, Quebec, Canada, September 28-30, 1999. Online at: http://www.idrc.ca/telecentre/evaluation/AR/20_Des.pdf

15. Johnson, Kelby (2003), "Telecenters and the Gender Dimension: An Examination of How Engendered Telecenters are Diffused in Africa", Thesis for Master of Arts in Communication, Culture and Technology, Graduate School of Arts and Sciences, Georgetown University, Washington DC. Online at: http://cct.georgetown.edu/thesis/KelbyJohnson.pdf

16. Jhunjunwala, Ashok (2000), Towards Hundred Million Telephones and 25 Million Internet Connections in India". Online at: http://www.tenet.res.in/Papers/100m/100m.html

17. King, John Leslie, and Kraemer, Kenneth L. (2003), "Impacts on the Organization of Enterprise and the Establishment and Maintenance of Civil Society". Available at: http://bob.nap.edu/html/esi/appc.html#john

18. McLellan, F. (1998), "'Like Hunger, Like Thirst:' patients, journals and the internet" in *Lancet*, 1998:352 (suppl II).

19. Mansell, R. and When, U. (eds.) (1998), "Knowledge Societies: Information Technology for Sustainable Development. Oxford University Press, UK. Online at: http://www.sussex.ac.uk/spru/ink/knowledge.html

20. National Science Foundation Report, (1998), "Economic and Social Significance of Information Technologies (Chapter 8)". Available at: http://www.nsf.gov/sbe/srs/seind98/c8/c8h.htm

21. Ricardo Gómez, Patrik Hunt, Emmanuelle Lamoureux (1999), *Enchanted by Telecentres: A Critical look at Universal Access to Information Technologies for International Development,* International Development Research Centre (IDRC), Canada. Available at: http://www.idrc.ca/pan/enchanted.html

22. Rogers, Everett M. (2000), "The Communication of Innovation, The need for Internet access multiplies along with obstacles". Online at: http://www.cnn.com/SPECIALS/2000/virtualvillages/story/essays/rogers/print.html

23. Rogers, Everett M. (1995), "Diffusion of Innovations", Free Press, New York.

24. Rogers, Everett M. (2003), "Diffusion of Innovations, 5th Edition", Free Press, New York.

25. Rogers, Everett M., and Kincaid, D.L. (1981), "Communication networks: Toward a new paradigm for research", Free Press, New York.

26. Roman, Raul (2003), "Diffusion of Innovation as Theoretical Framework for Telecenters", *Information Technologies and International Development*, 1, 2, pp. 53-66.

27. Roman, R. and Colle, R. D. (2001), "Digital Divide or Digital Bridge, Exploring Threats and Opportunities to Participation in Telecenter Initiatives," in *TechKnowLogia,* Vol. 3, No. 3. Available at: http://www.techknowlogia.org/

28. Roman, R. and Colle, R. D. (2002) (1), "Creating a Participatory Telecenter Enterprise", Paper prepared for the Participatory Communication Research Section in the annual meeting of International Association for Media and Communication Research, Barcelona, July 21-26, 2002, available at: http://ip.cals.cornell.edu/commdev/ictpapers.cfm

29. Roman, R. and Colle, R. D. (2002) (2), "Content for ICT Initiatives", Prepared for the International Congress of Information conference, "Information, knowledge and society. Challenges of new era," Havana International Conference Center, Cuba, April, 22 - 26, 2002. Online at: http://ip.cals.cornell.edu/commdev/documents/ictpaper-cuba.doc

30. Singhal, Arvind M. and Rogers, Everett M. (2000), "India's Communication Revolution: From Bullock Carts to Cyber Marts", Sage, New Delhi, India.

31. UNDP (2001), "Essentials, Synthesis of Lessons Learned", No. 5, United Nations Development Program, New York, September 2001. Online at: http://www.apdip.net/documents/policy/actionplans/Essentials05092001.pdf

32. UNDP (2001), "Human Development Report 2001: Making new technologies work for human development", United Nations Development Programme, New York 2001. Online at: http://hdr.undp.org/reports/global/2001/en/

33. UNDP (2000), "New Levers for Development and Prosperity". Online at: http://www.undp.org/dpa/choices/2000/june/p8-9.htm

34. Velden, Maja Van Der (2002), "Knowledge Facts, Knowledge Fiction: The Role of ICTs in Knowledge Management and Development", *Journal of International Development,* 14, 1, pp. 25-37. Online at: http://www.xs4all.nl/~maja/docs/maja/jid2002.pdf

35. World Bank (1998), "Knowledge for Development", *World development Report*, 1998-99. Online at: http://www.worldbank.org/wdr/wdr98/contents.htm

Internet Resources on ICTs for Development, Telecenters, e-govcernment, and Case Studies on ICTs in India:

1. Computers for India: http://www.digitalequalizer.org/index.html

2. Development Gateway: http://www.developmentgateway.org/

3. Digital Dividend, World Resources Institute, Lessons from the Filed: ICTs in Telecenters: http://www.digitaldividend.org/pubs/pubs_02_tele.htm

4. Digital Opportunities Initiative, Creating a Development Dynamic: http://www.opt-init.org/

5. Digital Opportunity Task Force, Addressing the Global Digital Divide: http://www.dotforce.org/

6. Global Coalition for Voices of the Poor Web Guide: Information and Communication Technology. Online at: http://www.worldbank.org/poverty/voices/globcoal/webguide/ict.htm

7. ICT Case Studies from Rural India: International Conference on Achieving Connectivity for the Rural Poor in India, Baramati, India, May 31-June 3, 2001. Online at: http://www.worldbank.org/poverty/voices/globcoal/baramati/casestudies.htm

8. Information for Development Program (InfoDev): http://www.infodev.org/

9. The World Bank Group, Global Information and Communication Technologies Department: http://info.worldbank.org/ict/

10. The World Bank E-Government Website: http://www1.worldbank.org/publicsector/egov/

11. The International Development Research Center, *Information and Communication Technologies for Development*: http://web.idrc.ca/en/ev-9977-201-1-DO_TOPIC.html

12. United Nations Development Programme, Information and Communications Technologies for Development: http://www.sdnp.undp.org/it4dev/

13. United Nations Information and Communication Technologies Task Force: http://www.unicttaskforce.org/

ICTs and Telecenter Case Studies, Evaluation and Impact Assessment

1. Blattman, C., Jensen, R., & Roman, R. (2002), "Assessing the Need and Potential for Community Networking for Developing Countries: A Case Study from India". Online at: http://edevelopment.media.mit.edu/SARI/papers/CommunityNetworking.pdf

2. Center for Electronic Governance, I.I.M. Ahmedabad (2002), "Gyandoot: Rural Cybercafes on Intranet, Dhar Madhya Pradesh, India, A Cost benefit Evaluation Study". Online at: http://www.iimahd.ernet.in/egov/GDeval-cegiima.PDF

3. Etta, Florence Ebam & Wamahiu, Sheila Parvyn (eds.) (2003), "INFORMATION AND COMMUNICATION TECHNOLOGIES FOR DEVELOPMENT IN AFRICA: VOLUME 2, The Experience with community telecenters", CODESRIA/IDRC 2003. Online at: http://web.idrc.ca/en/ev-33001-201-1-DO_TOPIC.html

4. Fuchs, Richard P. (ed.) (1998), "Little engines that did, CASE HISTORIES FROM THE GLOBAL TELECENTER MOVEMENT", IDRC Study/Acacia

Initiative, Futureworks, Inc. Online at: http://web.idrc.ca/en/ev-10630-201-1-DO_TOPIC.html

5. Gomez, R; Hunt, P; Lamoreux, E. (1999), "Telecentre Evaluation and Research: a global perspective", International Development Research Centre (IDRC), Canada, September 1999. Online at: http://www.idrc.ca/telecentre/evaluation/html/main.html

6. Gerster, Richard and Zimmerman, Sonja (2003), "Information and Communication Technologies (ICTs) and Poverty Reduction in Sub Sharan Africa: A Learning Study (Synthesis)" Building Digital opportunities Program, Gerster Consulting. Online at: http://www.gersterconsulting.ch/docs/Synthesis_report.pdf

7. Harris, Roger W. (1999), "Evaluating Telecentres within National Policies for ICTs in Developing Countries", International Development Research Centre (IDRC), Canada, September 1999. Online at: http://www.idrc.ca/telecentre/evaluation/nn/main.html

8. Holmes, Victoria (2001), "The Internet, inequality and exclusion in Peru: the social impact of the *cabinas públicas*", Dissertation presented for the MA in Area Studies (Latin America), Institute of Latin American Studies University of London. Online at: http://funredes.org/mistica/castellano/ciberoteca/participantes/docuparti/VictoriaHolmesCabinas.pdf

9. Latchem, Colin and Walker, David (Eds.) (2001), "Perspectives on Distance Education, Telecenters: Case studies and key issues, Management, Operations, Applications, Evaluation" The Commonwealth of Learning. Online at: http://www.col.org/telecentres/

10. Lobo, Albert and Balakrishnan, Suresh (2002), "Report Card on Bhoomi Kiosks: An Assessment of Benefits by Users of Computerized Land Records System in Karnataka", Public Affirs System, Bangalore. Online at: http://www1.worldbank.org/publicsector/bnpp/Bhoomi.pdf

11. Madon, Shirin and Kiran, G.K. (2001), "Information Technology for Citizen-Government Interface: A Study of Friends Project in Kerala". Online at: http://www1.worldbank.org/publicsector/bnpp/part1.pdf

12. NDTV (2004), "MP's ambitious Gyandoot programme flounders", India Country Gateway. Online at: http://www.incg.org.in/CountryGateway/News/MP%E2%80%99s+ambitious+Gyandoot+programme+flounders.htm

13. Reilly, Katherine and Gomez, Ricardo (2001), "Comparing Approaches: telecenter Evaluation Experiences in Asia and Latin America" Electronic Journal of Information Systems in Developing Countries, (2001) 4, 3, 1-17. Online at: http://www.is.cityu.edu.hk/research/ejisdc/vol4/v4r3.pdf

14. Trichenor, P., Donohue, G.A., and Olien, C.N. (1970), "Mass media flow and differential growth in knowledge", *Public Opinion Quarterly,* 12, 2, pp. 159-170.

15. Ulrich, Paul (2004), "Poverty Reduction Through Access to Information and Communication Technologies in Rural Areas: An Analysis of the Survey1 Results from the Social Impact Assessment Conducted by the Chinese Ministry of Science & Technology and the United Nations Development Program: With Recommendations on Issues of Future Sustainability and Household Participation", Electronic Journal of Information Systems in Developing Countries (2004) 16, 7, 1-38. Online at: http://www.is.cityu.edu.hk/research/ejisdc/vol16/v16p7.pdf

16. Whyte, Anne (2000), "ASSESSING COMMUNITY TELECENTRES, Guidelines for Researchers" IDRC 2000. Online at: http://web.idrc.ca/en/ev-28301-201-1-DO_TOPIC.html

17. Young, Judy; Ridley, Gail; Ridley, Jeff (2001), "A Preliminary Evaluation of Online Access Centres: Promoting Micro E-Business Activity in Small, Isolated Communities", The Electronic Journal on Information Systems in Developing Countries (EJISDC), 4, 1, 1-17. Online at : http://www.is.cityu.edu.hk/research/ejisdc/vol4/v4r1.pdf

18. Young Valerie (1997), *ICTs and Development: Testing a Framework for Evaluation*, Performance Review Division, Canadian International Development Agency (CIDA). Online at: http://www.acdi-cida.gc.ca/cida_ind.nsf/0e258f35e6cd1eb28525662d0057b6fe/0058916d51fb84c4852564bf005431a1?OpenDocument#sec1?OpenDocument

Telecenter Sustainability

1. Best Michael L, Maclay Colin M (2002), "Community Internet Access in Rural Areas: Solving the Economic Sustainability Puzzle". Online at: (http://edev.media.mit.edu/SARI/papers/gitrr2002_ch08.pdf)

2. Colle, Royal, Raul Roman, and A. Pfiester (2001), "Modules For Telecenter Management Training", *Interim report to the International Telecommunications Union, Geneva, Switzerland.*

3. Francisco J. Proenza (2001), "Telecenter Sustainability: Myths and Opportunities," in *The Journal of Development Communication*, 12/2, pp. 94-109. Online at: http://www.developmentgateway.org/download/111602/Telecenter_Sustainability_Myths_and_Opportunities-Proenza_0102.pdf

4. Roman, R. and Colle, R. D. (2001), "SUSTAINING THE COMMUNITY TELECENTER MOVEMENT", national workshop on "Strategies for Applying Information and Communication Technologies for Rural Development," held in Chennai, Tamil Nadu, India, May 17-18, 2001.

5. The World Bank (2003), "Sustainable Telecenters: A Guide for Government Policy". Online at: http://info.worldbank.org/ict/WSIS/docs/comp_Telecenters.pdf

Resources Available and Studies Conducted on SARI

1. Aral Sinan, Escobari Marcela, Nishina Randal (2001) *Assessing network applications for Economic Development.* Online at: http://edev.media.mit.edu/SARI/papers/pae.ksg.pdf

2. Best Michael L, Maclay Colin M (2002), *Community Internet Access in Rural Areas: Solving the Economic Sustainability Puzzle.* Online at: http://edev.media.mit.edu/SARI/papers/gitrr2002_ch08.pdf

3. Blattman Christopher, Jensen Robert, Roman Raul (2002), *Assessing the Need and Potential for Community Networking for Developing Countries: A Case Study From India.* Online at: http://edev.media.mit.edu/SARI/papers/CommunityNetworking.pdf

4. Hudson Ben H (2002), "Private Sector Provision of Internet Access in Rural India", Master in City Planning Thesis, Massachusetts Institute of Technology, Cambridge.

5. Kumar Richa (Ms.), Jhunjhunwala Ashok (2002), *Taking Internet to Village, A Case Study of Project at Madurai Region.* Online at: http://edev.media.mit.edu/SARI/papers/uncrd_report_7.8.021.pdf

6. Sustainable Access in Rural India (SARI) website: http://edevelopment.media.mit.edu/SARI/mainsari.html

(Note: The web addresses mentioned in the above references were accessed during March and April, 2004.)

APPENDIX A

Comparative Analysis of Demographic Profile of Kiosk Users and their Respective Village Communities

Table A.1: Ulagapitchampatti Village

Characteristic	Sample Size	Sample Mean/ Proportion	95% Confidence Interval		Village Population Mean*
Demography:			Lower Limit	Upper Limit	
Average Age of Users	35	25.9	20.7	31.1	
Proportion of Users < 30 Yrs.	35	65.7%	49.4%	82.0%	68.0%***
Proportion of Male Users	35	68.6%	52.6%	84.5%	50.5%**
Proportion of SC/ST Users	35	2.9%	-2.9%	8.6%	23.6%
Proportion of Minorities (Muslims, Christians)	35	5.7%	-2.3%	13.7%	2.8%
Proportion of Illiterate Users	35	14.3%	2.3%	26.3%	29.0%**
Proportion of Illiterate Heads of User HH	34	17.6%	4.3%	30.9%	29.0%**
Income and Assets:					
Proportion of User HH Income <=Rs. 1000	33	78.8%	64.3%	93.3%	
Proportion of 2-Wheeler Owners	30	46.7%	28.0%	65.3%	18.44%
Proportion of Telephone Ownership	30	3.3%	-3.4%	10.0%	3.21%
Proportion of Radio/Transistor Ownership	30	46.7%	28.0%	65.3%	60.52%
Proportion of B&W TV Ownership	30	63.3%	45.3%	81.3%	51.10%
Proportion of Color TV Ownership	30	10.0%	-1.2%	21.2%	14.23%
Proportion of Cable TV Ownership	30	3.3%	-3.4%	10.0%	22.24%
Proportion of Users Owning House	35	77.1%	62.7%	91.6%	90.58%
Proportion of Users Owning Thatched House	35	22.9%	8.4%	37.3%	26.65%
Proportion of Users Not Having Electrified House	34	32.4%	16.0%	48.7%	30.9%

Source: SARI Kiosk Users Survey 2003 conducted by the author
* Source: SARI Household Survey 2003 based on a population survey of 500 households conducted by SARI
** Source: Census, 2001 for Thiruvadavur
*** Based on figures for Madurai district for 1991 census
Author: Rajendra Kumar

Table A.2: Thiruvadavur Village

Characteristic	Sample Size	Sample Mean/ Proportion	95% Confidence Interval		Village Population Mean
Demography:			Lower Limit	Upper Limit	
Average Age of Users	28	16.29	14.3	18.3	
Proportion of Users < 30 Yrs.	28	100.0%	100.0%	100.0%	68.0%***
Proportion of Male Users	28	75.0%	58.2%	91.8%	50.5%*
Proportion of SC/ST Users	26	7.7%	-3.1%	18.5%	18.6%*
Proportion of Minorities (Muslims, Christians)	28	7.1%	-2.8%	17.1%	2.8%**
Proportion of Illiterate Users	28	0.0%	0.0%	0.0%	29.0%*
Proportion of Illiterate Heads of User HH	27	3.7%	-3.8%	11.2%	29.0%*
Income and Assets:					
Proportion of User HH Income <=Rs. 1000	26	15.4%	0.8%	30.0%	
Proportion of 2-Wheeler Owners	21	42.9%	20.3%	65.4%	18.44%**
Proportion of Telephone Ownership	21	9.5%	-3.8%	22.9%	3.21%**
Proportion of Radio/Transistor Ownership	21	66.7%	45.2%	88.1%	60.52%**
Proportion of B&W TV Ownership	21	47.6%	24.9%	70.4%	51.10%**
Proportion of Color TV Ownership	21	42.9%	20.3%	65.4%	14.23%**
Proportion of Cable TV Ownership	21	47.6%	24.9%	70.4%	22.24%**
Proportion of Users Owning House	28	78.6%	62.7%	94.5%	90.58%**
Proportion of Users Owning Thatched House	28	3.6%	-3.6%	10.8%	26.65%**
Proportion of Users Not Having Electrified House	28	7.1%	-2.8%	17.1%	30.9%**

Source: SARI Kiosk Users Survey 2003 conducted by author
* Source: Census, 2001 for Thiruvadavur
** Source: SARI Household Survey, 2003 for Ulagapitchampatti
*** Based on figures for Madurai district for 1991 census
Author: Rajendra Kumar

Table A.3: Keelaiyur Village

Characteristic	Sample Size	Sample Mean/ Proportion	95% Confidence Interval		Village Population Mean*
Demography:			Lower Limit	Upper Limit	
Average Age of Users	20	20.25	17.3	23.2	
Proportion of Users < 30 Yrs.	20	90.0%	76.0%	104.0%	68.0%***
Proportion of Male Users	20	80.0%	61.3%	98.7%	50.3%**
Proportion of SC/ST Users	20	65.0%	42.7%	87.3%	25.1%
Proportion of Minorities (Muslims, Christians)	20	0.0%	0.0%	0.0%	4.05%
Proportion of Illiterate Users	20	5.0%	-5.2%	15.2%	28.4%**
Proportion of Illiterate Heads of User HH	19	21.1%	1.4%	40.7%	28.4%**
Income and Assets:					
Proportion of User HH Income <=Rs. 1000	18	22.2%	1.5%	42.9%	
Proportion of 2-Wheeler Owners	13	53.8%	23.7%	84.0%	38.9%
Proportion of Telephone Ownership	13	38.5%	9.1%	67.9%	14.6%
Proportion of Radio/Transistor Ownership	13	84.6%	62.8%	106.4%	77.1%
Proportion of B&W TV Ownership	13	46.2%	16.0%	76.3%	69.8%
Proportion of Color TV Ownership	13	38.5%	9.1%	67.9%	27.5%
Proportion of Cable TV Ownership	13	53.8%	23.7%	84.0%	57.4%
Proportion of Users Owning House	20	95.0%	84.8%	105.2%	96.4%
Proportion of Users Owning Thatched House	20	5.0%	-5.2%	15.2%	11.1%
Proportion of Users Not Having Electrified House	17	17.6%	-2.0%	37.2%	11.4%

Source: SARI Kiosk Users Survey 2003 conducted by author
* Source: SARI Household Survey 2003 based on a population survey of 500 households conducted by SARI
** Source: Census, 2001
*** Based on figures for Madurai district for 1991 census
Author: Rajendra Kumar

Table A.4: Thaniyamangalam Village

Characteristic	Sample Size	Sample Mean/ Proportion	95% Confidence Interval		Village Population Mean*
Demography:			Lower Limit	Upper Limit	
Average Age of Users	29	16.1	13.9	18.3	
Proportion of Users < 30 Yrs.	29	96.6%	89.6%	103.5%	68.0%***
Proportion of Male Users	29	65.5%	47.4%	83.6%	46.9%**
Proportion of SC/ST Users	29	10.3%	18.9%	42.0%	47.3%
Proportion of Minorities (Muslims, Christians)	29	0.0%	0.0%	0.0%	0.2%
Proportion of Illiterate Users	29	0.0%	0.0%	0.0%	24.2%**
Proportion of Illiterate Heads of User HH	28	3.6%	-3.6%	10.8%	24.2%**
Income and Assets:					
Proportion of User HH Income <=Rs. 1000	27	33.3%	14.7%	52.0%	
Proportion of 2-Wheeler Owners	26	23.1%	6.1%	40.1%	15.8%
Proportion of Telephone Ownership	26	42.3%	22.4%	62.3%	3.3%
Proportion of Radio/Transistor Ownership	26	80.8%	64.9%	96.7%	44.2%
Proportion of B&W TV Ownership	26	19.2%	3.3%	35.1%	36.9%
Proportion of Color TV Ownership	26	69.2%	50.6%	87.9%	21.8%
Proportion of Cable TV Ownership	26	61.5%	41.9%	81.2%	24.4%
Proportion of Users Owning House	29	96.6%	89.6%	103.5%	96.2%
Proportion of Users Owning Thatched House	29	6.9%	-2.7%	16.5%	31.8%
Proportion of Users Not Having Electrified House	24	4.2%	-4.3%	12.6%	46.7%

Source: SARI Kiosk Users Survey 2003 conducted by author
* Source: SARI Household Survey 2003 based on a population survey of 500 households conducted by SARI
** Source: Census, 2001
*** Based on figures for Madurai district for 1991 census
Author: Rajendra Kumar

Table A.5: Kidaripatti Village

Characteristic	Sample Size	Sample Mean/ Proportion	95% Confidence Interval		Village Population Mean*
Demography:			Lower Limit	Upper Limit	
Average Age of Users	20	15.1	11.8	18.3	
Proportion of Users < 30 Yrs.	20	100.0%	100.0%	100.0%	68.0%***
Proportion of Male Users	20	90.0%	76.0%	104.0%	52.7%**
Proportion of SC/ST Users	18	61.1%	36.9%	85.4%	21.4%
Proportion of Minorities (Muslims, Christians)	20	0.0%	0.0%	0.0%	19.2%
Proportion of Illiterate Users	20	0.0%	0.0%	0.0%	39.1%**
Proportion of Illiterate Heads of User HH	17	0.0%	0.0%	0.0%	39.1%**
Income and Assets:					
Proportion of User HH Income <=Rs. 1000	20	20.0%	1.3%	38.7%	
Proportion of 2-Wheeler Owners	18	50.0%	25.1%	74.9%	10.6%
Proportion of Telephone Ownership	18	0.0%	0.0%	0.0%	1.8%
Proportion of Radio/Transistor Ownership	18	38.9%	14.6%	63.1%	61.6%
Proportion of B&W TV Ownership	18	22.2%	1.5%	42.9%	47.4%
Proportion of Color TV Ownership	18	38.9%	14.6%	63.1%	23.0%
Proportion of Cable TV Ownership	18	38.9%	14.6%	63.1%	42.0%
Proportion of Users Owning House	20	85.0%	68.3%	101.7%	95.6%
Proportion of Users Owning Thatched House	20	0.0%	0.0%	0.0%	24.2%
Proportion of Users Not Having Electrified House	15	6.7%	-7.1%	20.5%	58.8%

Source: SARI Kiosk Users Survey 2003 conducted by author
* Source: SARI Household Survey 2003 based on a population survey of 500 households conducted by SARI
** Source: Census, 2001
*** Based on figures for Madurai district for 1991 census
Author: Rajendra Kumar

APPENDIX B

GLOSSARY OF TERMS USED

1. **Adangal** – Record of land cultivation in the village
2. **Chitta** - Register showing the land ownership in the village
3. **CM Cell** – Chief Minister's Cell dealing with public grievances
4. **Community** – A term used to denote the major caste groups of persons in Tamil Nadu, e.g., Backward Castes (BC), Forward Castes (FC), Most Backward Castes (MBC), Scheduled Castes and Scheduled Tribes (SC and ST), etc.
5. **Community Certificate** – Certificate that a person belongs to a particular community
6. **Dalits/Scheduled Castes and Scheduled Tribes** – Traditionally the most socially and economically backward communities in India
7. **Distress Relief** – A Government scheme for providing financial relief to a family in distress (usually due to the death of the main breadwinner)
8. **Firka** – An administrative unit consisting of 10-20 villages in a Taluk
9. **Grievance Day** – Weekly day in government offices open to the public for meeting officials and submitting grievance petitions
10. **Patta** - Record of Land Ownership
11. **Revenue Inspector** – A government official who supervises the work of the Village Administrative Officers in the villages of a firka
12. **Taluk** – A small administrative unit within a district

13. **Tahsildar** – Administrative head of a Taluk
14. **Village Administrative Officer** – A government official at village level who maintains land and cultivation records, and verifies details for issue of all types of certificates such as community, income, birth, death, etc.

APPENDIX C

MULTIPLE REGRESSION ANALYSIS OF IMPACT OF KIOSKS ON GOVERNMENT SERVICES

I used the following regression model for estimating the impact of the kiosks on the demand for government services in Melur:

No. of Applications Received Per 1000 Population in the village = β_0 + β_1*Population of the village + β_2*Literacy Rate in the Village + β_3*% of SC/ST Population in the Village + β_4*SARI + ε

The variables used in the multiple regression analysis presented below are as follows:

(i) *totalappl* – total no. of applications (per 1000 population) received in Taluk office for all services

(ii) *birth* - total no. of applications (per 1000 population) received in Taluk office for birth certificates

(iii) *death* - total no. of applications (per 1000 population) received in Taluk office for death certificates

(iv) *income* - total no. of applications (per 1000 population) received in Taluk office for income certificates

(v) *community* - total no. of applications (per 1000 population) received in Taluk office for community (caste) certificates

(vi) *gdp* - total no. of applications (per 1000 population) received in Taluk office for grievance day petitions

(vii) *oap* - total no. of applications (per 1000 population) received in Taluk office for old age pensions

(viii) *totalpopl00* – total population of the village in hundreds

(ix) *literacy2001* – literacy rate in the village (expressed as ratio)

(x) *scst* – proportion of SC/ST population in the village (expressed as ratio)

(xi) *sari* - dummy variable, equal to 1 if the village has a kiosk and 0 otherwise

Results of Multiple Regression Analysis:

```
. regress totalappl totalpopl00 literacy2001 scst sari

      Source |       SS       df       MS              Number of obs =      78
-------------+------------------------------           F(  4,    73) =    4.61
       Model |  450875.085     4  112718.771           Prob > F      =  0.0022
    Residual |  1783942.41    73  24437.5673           R-squared     =  0.2018
-------------+------------------------------           Adj R-squared =  0.1580
       Total |   2234817.5    77  29023.6039           Root MSE      =  156.33

------------------------------------------------------------------------------
   totalappl |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 totalpopl00 |  -2.832643   .9515802    -2.98   0.004    -4.729139   -.9361461
literacy2001 |  -510.0088   192.1712    -2.65   0.010    -893.0055   -127.0121
        scst |   23.22216   131.1416     0.18   0.860    -238.1426    284.587
        sari |   58.82838   56.96366     1.03   0.305    -54.70002    172.3568
       _cons |   506.5208   127.3996     3.98   0.000     252.6137    760.4279
------------------------------------------------------------------------------

. regress birth totalpopl00 literacy2001 scst sari

      Source |       SS       df       MS              Number of obs =      78
-------------+------------------------------           F(  4,    73) =    4.43
       Model |  255.911866     4  63.9779664           Prob > F      =  0.0029
    Residual |  1053.98711    73  14.4381796           R-squared     =  0.1954
-------------+------------------------------           Adj R-squared =  0.1513
       Total |  1309.89897    77   17.011675           Root MSE      =  3.7998

------------------------------------------------------------------------------
       birth |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 totalpopl00 |   .0025082   .0231298     0.11   0.914    -.0435895    .0486059
literacy2001 |   -1.10161   4.671061    -0.24   0.814    -10.41102    8.207802
        scst |  -2.182686   3.187628    -0.68   0.496     -8.53562    4.170248
        sari |   4.950129   1.384602     3.58   0.001      2.19062    7.709638
       _cons |   2.304182   3.096673     0.74   0.459    -3.867479    8.475843
------------------------------------------------------------------------------

. regress death totalpopl00 literacy2001 scst sari

      Source |       SS       df       MS              Number of obs =      78
-------------+------------------------------           F(  4,    73) =    1.45
       Model |  40.2752284     4  10.0688071           Prob > F      =  0.2251
```

```
    Residual |  505.519057    73  6.92491859           R-squared     =  0.0738
-------------+------------------------------           Adj R-squared =  0.0230
       Total |  545.794285    77  7.08823747           Root MSE      =  2.6315

------------------------------------------------------------------------------
       death |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 totalpop100 |   .0060962   .0160186     0.38   0.705    -.0258288    .0380212
literacy2001 |  -1.167681   3.234943    -0.36   0.719    -7.614914    5.279552
        scst |  -.9554108   2.207592    -0.43   0.666    -5.355135    3.444313
        sari |   1.817236   .9589064     1.90   0.062     -.093862    3.728333
       _cons |    3.59128   2.144601     1.67   0.098    -.6829032    7.865464
------------------------------------------------------------------------------

. regress income totalpop100 literacy2001 scst sari

      Source |       SS       df       MS              Number of obs =      78
-------------+------------------------------           F(  4,    73) =    4.84
       Model |  150071.535     4  37517.8838           Prob > F      =  0.0016
    Residual |  565573.619    73  7747.58383           R-squared     =  0.2097
-------------+------------------------------           Adj R-squared =  0.1664
       Total |  715645.155    77  9294.09292           Root MSE      =   88.02

------------------------------------------------------------------------------
      income |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 totalpop100 |   -1.71561   .5357961    -3.20   0.002     -2.78345   -.6477699
literacy2001 |  -270.3244   108.2038    -2.50   0.015    -485.9743   -54.67458
        scst |  -7.483731   73.84049    -0.10   0.920    -154.6476    139.6802
        sari |   28.28868   32.07392     0.88   0.381    -35.63454    92.21191
       _cons |   282.4447   71.73355     3.94   0.000       139.48    425.4095
------------------------------------------------------------------------------

. regress community totalpop100 literacy2001 scst sari

      Source |       SS       df       MS              Number of obs =      78
-------------+------------------------------           F(  4,    73) =    4.34
       Model |  85368.8105     4  21342.2026           Prob > F      =  0.0033
    Residual |  358828.148    73  4915.45408           R-squared     =  0.1922
-------------+------------------------------           Adj R-squared =  0.1479
       Total |  444196.958    77  5768.79166           Root MSE      =   70.11

------------------------------------------------------------------------------
   community |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 totalpop100 |  -1.111679   .4267743    -2.60   0.011    -1.962239   -.2611195
literacy2001 |  -230.8428   86.18688    -2.68   0.009     -402.613   -59.07258
        scst |   37.92075    58.8157     0.64   0.521    -79.29877    155.1403
        sari |   20.65344   25.54763     0.81   0.421    -30.26292     71.5698
       _cons |   209.5537   57.13747     3.67   0.000     95.67891    323.4285
------------------------------------------------------------------------------

. regress gdp totalpop100 literacy2001 scst sari

      Source |       SS       df       MS              Number of obs =      78
```

```
-------------+------------------------------           F(  4,    73) =    4.00
       Model |   9.1559562     4  2.28898905           Prob > F      =  0.0054
    Residual |  41.7247336    73  .571571694          R-squared     =  0.1799
-------------+------------------------------           Adj R-squared =  0.1350
       Total |  50.8806898    77   .66078818           Root MSE      =  .75602

------------------------------------------------------------------------------
         gdp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 totalpopl00 |   .0106232   .0046021     2.31   0.024     .0014513    .0197951
literacy2001 |   1.769066   .9293829     1.90   0.061    -.0831916    3.621323
        scst |   .1810547     .63423     0.29   0.776    -1.082964    1.445073
        sari |   .1933316   .275489     0.70   0.485    -.3557172    .7423803
       _cons |  -.8826248   .6161331    -1.43   0.156    -2.110576    .3453266
------------------------------------------------------------------------------

. regress oap totalpopl00 literacy2001 scst sari

      Source |       SS       df       MS              Number of obs =      78
-------------+------------------------------           F(  4,    73) =    2.11
       Model |  112.336928     4   28.084232           Prob > F      =  0.0887
    Residual |  973.523827    73  13.3359428          R-squared     =  0.1035
-------------+------------------------------           Adj R-squared =  0.0543
       Total |  1085.86075    77  14.1020877           Root MSE      =  3.6518

------------------------------------------------------------------------------
         oap |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 totalpopl00 |  -.0245987   .0222294    -1.11   0.272    -.0689019    .0197045
literacy2001 |  -8.339506   4.489223    -1.86   0.067    -17.28651    .6075027
        scst |  -4.256726   3.063538    -1.39   0.169    -10.36235    1.848897
        sari |   2.924736   1.330702     2.20   0.031     .2726512    5.576821
       _cons |   9.508778   2.976124     3.20   0.002     3.577372    15.44018
------------------------------------------------------------------------------
```

APPENDIX D

Sustainable Access in Rural India Project: Impact Evaluation
Internet Kiosk Users Survey Questionnaire

Section 1: Identification Details

1. Date of Interview: Time of Interview: Panchayat Village:
2. Name of the Interviewer:

Section 2: Demographic Information about the User

1. Name: Age (years): Sex (M/F):
2. Address (house no., hamlet and street name):
3. Are you a student now? (Y/N):
   If yes, pl. tell me about your current education (circle one below):
   School student **College student** **Technical student (ITI etc.)**
   Professional student (engg/medical/law) **Other (specify):**
4. (If you are not a student) Your highest education (circle one):
   Below SSLC **SSLC** **+2** **College graduate** **Technical (ITI etc.)**
   Professional (engg./medical/law) **Other (Specify):**
5. Languages you can read and write (circle one or more): **Tamil English Other (specify):**
6. (If you are not the head of your household) Highest education of the head of your household (circle one):
   Below SSLC **SSLC** **+2** **College graduate** **Technical (ITI etc.)**
   Professional (engg./medical/law) **Other (Specify):**
7. Religion (circle one) **Hindu** **Muslim** **Christian** **Other (specify):**
8. Community(if applicable) (circle one) **SC** **ST** **BC** **MBC** **FC**
9. Whether any member/members of your household live outside this village? (Y/N):

If yes, please provide details below:

Name	**His/her relationship to head of household** 1. Head of household himself/herself 2. Son/Daughter 3. Spouse 4. Brother/sister 5. Other relative 6. Not related	**Where is s/he living?** 1. Within Melur Taluka 2. Within Madurai district 3. Outside Madurai, but within TN 4. Outside TN, but within India 5. In a Gulf country 6. South-East Asia (Singapore, Malayasia, etc.) 7. Other countries (specify)	**How frequently do you communicate with him/her?** 1.Once a week 2. Once in a month 3. 2-3 times a year 4. Once in a year	**How do you communicate with him/her?** 1.Letter 2.Telephone 3.Telegram 4. Email 5. Voice mail/Voice chat 6. Other (pl. specify)

Section 3: Household Assets

1. Ownership of your present house (Owned, Rented, Other):
2. If rented, rent paid per month (Rs.) :
3. Construction type (circle one) : **Thatched** **Tiled** **Concrete Roof** **Other (specify):**
4. If electrified, what is your average bimonthly electricity bill (Rs.)?:
5. Pl. tell me about your household assets (circle one or more):
   Motorcycle/Scooter/Moped **Car/Jeep/Van** **Tractor** **Telephone**
   Radio/Transistor **B&W TV** **Colour TV** **Cable TV**
   Computer **Internet connection at home**

Section 4: Occupation and Income

1. Does your household receive remittances from outside? (Y/N):
   If yes, how much per month (Rs.) (circle one):
   Below Rs. 500 500-1000 1000-2500 2500-5000 More than Rs. 5000
2. What is the average total monthly income of your household, excluding remittances (Rs.) (circle one):
   Below Rs. 500 500-1000 1000-2500 2500-5000 More than Rs. 5000
3. Pl. tell me about the occupation of the working members of your household (include yourself if you are working):

Name	**Primary Occupation ***	**Place where working** 1. Within this village 2 Within Melur Taluka 3. Within Madurai district 4. Outside Madurai, but within TN 5. Outside TN, but within India 6. In a Gulf country 6. South-East Asia (Singapore, Malayasia, etc.) 7. Other countries

* Primary Occupations:

1. Daily agricultural labor – primarily working in others' fields
2. Farmer – Primarily working in his/her own field
3. Primarily engaged in rearing animals
4. Daily work in informal non-agricultural enterprises (food processing, shops etc.) (pl. specify)
5. Skilled labor – mason, plumber, electrician, etc.
6. Job in organized sector (pl. specify)
7. Teacher
8. Government service
9. Professional (Doctor, Engineer, Lawyer, etc.)
10. Other (pl. specify)

Section 5: Applications Usage at Internet Kiosk

1. How did you become aware of this kiosk? (circle one or more):
   Through a friend/relative Canvassing by kiosk operator You visited yourself
   Newspaper Other (specify):
2. When did you first come to kiosk (specify the month and year)?:
3. How many times in total have you visited the kiosk so far? (circle one):
   Only once 2-3 times 4-5 times 6-10 times More than 10 times
4. Have you ever felt any difficulty in freely accessing and using the kiosk (in the sense of being personally able to go there and use the kiosk)? (Y/N):
   If yes, pl. describe what difficulty/ies you have faced:

5. Pl. tell me about your **last** visit to the kiosk:
   (i) When did you visit the kiosk last time? (mention date):
   (ii) How much time did you spend at the kiosk when you visited it last time? (hrs./mts.):
   (iii) Was the kiosk operator available when you visited it last time? (Y/N):
   If **yes**, tell me the following:
   (a) Did you find him/her knowledgeable about the kiosk services? (Y/N):
   (b) Did you feel that s/he was well-trained in handling computers? (Y/N):
   (c) Was s/he helpful to you in completing your task? (Y/N):

(iv) How many other users were there at the kiosk when you visited it last time? (circle one):
None 1-2 users 3-5 users 6-10 users More than 10 users

(v) Did you feel comfortable at the kiosk? (Y/N):
If no, pl. tell me why you did not feel comfortable (pl. describe):

(vi) Pl. tell me what applications/services you used at kiosk when you visited it last time? (circle one or more):
Computer training Typing Email Voice mail/Voice chat Birth & Death Income certificate Community certificate Old Age Pension Petitions to Govt. Health Agriculture Veterinary Astrology Job Search/Resume Browsing Games Other (specify):

(vii) Did you find the service you used at the kiosk useful to you? (Y/N):
If **yes,** tell me why (circle one or more):
It is faster Easier Cheaper Eliminates corruption Immediate Response Other (specify):
If you did not find the service useful to you, pl. tell me why (pl. describe):

(viii) How much money did you spend at the kiosk when you visited it last time? (Rs.):
Did you feel it was a fair/good price for availing the service at the kiosk? (Y/N):
If no, how much would you be willing to pay for the service you used at the kiosk? (Rs.):

6. How much do you spend monthly on your use of kiosk (Rs.)? (circle one):
Below Rs. 20 Rs. 20-50 Rs. 50-100 More than Rs. 100

7. Do you feel that you can easily financially afford the services at the kiosk? (Y/N):
If no, pl. tell me which services should be made more affordable and how much would you be willing to pay for those services:

Specify the service/s which you feel should be made more affordable (select from the list below)*	**How much would you be willing to pay for this service? (circle one)**						
	Rs. 0-10	10-20	20-30	30-40	40-50	50-100	>100
	Rs. 0-10	10-20	20-30	30-40	40-50	50-100	>100
	Rs. 0-10	10-20	20-30	30-40	40-50	50-100	>100
	Rs. 0-10	10-20	20-30	30-40	40-50	50-100	>100

* 1. Computer Training 2. Typing 3. Email 4. Voice Mail/Voice Chat 5. Birth & Death 6. Income certificate 7. Community certificate 8. Old Age Pension 9. Petitions to Govt. 10. Health 11. Agriculture 12. Veterinary 13. Astrology 14. Job Search/Resume 15. Browsing 16.Games 17. Other (specify)

8. Pl. tell me which applications you have used at the kiosk since you started coming here:

Applications at the Kiosk which you have used (select from the list below)*	**Tell me how useful the service was to you** (Very Low 1 2 3 4 5 Very High)	**If the service was useful, tell me why it was useful to you (pl. describe)** 1. It is faster than before 2. Easier 3. Less costly 4. Eliminates corruption 5. Immediate response 6. Other (specify)	**If you did not find the service useful to you, pl. tell me the reason/s (pl. describe)**	**How would you have availed this service in the absence of kiosk? (Pl. describe)**	**How much would you have paid for availing this service in the absence of kiosk? (Rs.)**

* 1. Computer Training 2. Typing 3. Email 4. Voice Mail/Voice Chat 5. Birth & Death 6. Income certificate 7. Community certificate 8. Old Age Pension 9. Petitions to Govt. 10. Health 11. Agriculture 12. Veterinary 13. Astrology 14. Job Search/Resume 15. Browsing 16.Games 17. Other (specify)

Section 6: Computer and Internet Awareness

1. Pl. tell me how you and other members (if any) in your household became aware of computers and internet?

Name	**How did s/he become aware of computers and internet?** 1. Education in school/college 2. Training in a computer institute (specify) 3. Newspaper/magazines /books 4. Friends/Relatives 5. Training at Kiosk in the village 6. Other (specify)	**Whether s/he was aware of computers and internet before the kiosk was set up in this village or other villages? (Y/N)**	**If no, then whether s/he became aware of computers and internet due to the kiosk in this village or other villages? (Y/N). If yes, pl. describe how?**

Section 7: Provision of Additional Applications at the Kiosk

1. Pl. tell me what additional services would you like the kiosk to provide?

Services	**How important is this service for you and your household members?** (Very Low 1 2 3 4 5 Very High)	**How do you avail it now?** 1. Visit the concerned office personally 2. Through a friend/relative 3. Through an agent 4. Other (pl. describe)	**Are you satisfied with the present method of availing this service?** (Very Low 1 2 3 4 5 Very High)	**Would you like the kiosk to provide this service? (Y/N)**	**If yes, how much service charge would you be willing to pay? (mention one)** 1. Rs. 0-10 2. Rs. 10-20 3. More than Rs. 20
Paying electricity bill, telephone bill, etc.					
Paying fees for other govt. services					
Repayment of loan taken from banks etc.					
Applying for income,					

community certificates					
Applying for Chitta, Adangal Copies					
Registration of land sales, transfers					
Applying for encumbrance certificates					
Applying for Govt. jobs					
Other services (Pl. specify)					

Section 8: Access, Use, and Usefulness of Kiosk

B. Access and Use of Kiosk

1. Please tell me whether any group/s in the village such as dalits, women, children, and religious minorities face any difficulties in freely accessing and using the kiosk (in the sense of being personally able to go there and use the kiosk):

Groups	**Whether they can freely access and use the kiosk? (Y/N)**	**If you feel they face any difficulties in accessing and using the kiosk, please describe it**
Dalits in the village		
Women in the village		
Children (6-18 yrs.) in the village		
Muslims/Christians in the village		
Any other group (Pl. specify)		

2. Do you think that more kiosks should be established in other hamlets in this village? (Y/N): If, yes, which hamlets?

3. How much would you be willing to pay for a three hour training to use the computer and the internet? (circle one): **(Rs.) 0-10 10-20 20-30 30-40 40-50 More than 50**
4. How much would you be willing to pay for using internet for one hour? (circle one): **(Rs.) 0-10 10-20 20-30 30-40 40-50 More than 50**

B. Usefulness of the Services at the Kiosk for the Village

1. Pl. tell me, in your opinion, which service/s at the kiosk has/have been useful/beneficial to people in your village?

List three useful kiosk services* to people in your village (starting with the most useful one)	**Please describe how this service has been useful/beneficial to people in your village (specify one or two examples, etc.)**
1.	

2.	
3.	

* 1. Computer Training 2. Typing 3. Email 4. Voice Mail/Voice Chat 5. Birth & Death 6. Income certificate 7. Community certificate 8. Old Age Pension 9. Petitions to Govt. 10. Health 11. Agriculture 12. Veterinary 13. Astrology 14. Job Search/Resume 15. Browsing 16.Games 17. Other (specify)

2. Any other comments you would like to provide about the kiosk in your village: